Exploring Recovery Outcomes in Perinatal Mental Health and Psychosis Populations

Victoria Louise Smallman (Trainee Clinical Psychologist)

Primary Supervisor: Dr Jo Hodgekins

Secondary Supervisor: Dr Sian Coker

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University of East Anglia

Faculty of Medicine and Health Sciences

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Thesis Portfolio Abstract

Background

The perinatal period is important and mental health difficulties during this time can have long-term consequences for mother and baby. Perinatal mental health research has grown considerably over the last 10 years and sits alongside marked increases in NHS funding. However, there are gaps in understanding longer term functional outcomes. Conversely, research exploring novel interventions for functional recovery in psychosis outside of the perinatal period continues to grow. This portfolio aims to explore the recovery outcomes in both perinatal mental health and psychosis populations, exploring long-term outcomes in perinatal mothers with clinical mental health diagnoses, and exploring variations in delivery of Social Recovery Therapy (SRT) in the SUPEREDEN trial (Fowler et al., 2018).

Method

The review within this portfolio follows a systematic approach to searching and screening the research literature, including 17 studies with 4452 perinatal mothers with clinical mental health diagnoses. The empirical paper is a secondary analysis exploring the delivery of SRT in people recovering from first episode psychosis.

Results

The systematic review shows a wide range of recovery rates for mothers with perinatal mental health difficulties across a long-term follow-up period, with 35-94% mothers experiencing remission in depression and 36-66% in postpartum psychosis samples. The empirical paper found significant baseline differences between groups who received different types of SRT. Compared to the ‘full’ and ‘partial’ groups, the ‘no dose’ group reported significantly lower premorbid levels of scholastic achievement and lower levels of higher education.

Conclusion

The systematic review shows varying symptomatic recovery rates in the long term, however, less is known about functional recovery. For mothers with postpartum psychosis, research shows mothers can recover and we could consider using psychosis literature to further understand and promote functional recovery. Interventions like SRT could support functional recovery in this population, however further research would be needed.

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CHAPTER ONE

Introduction to the Thesis Portfolio

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Introduction to the Thesis Portfolio

The perinatal period has been defined in much of the literature as from conception to 1 year post birth (NHS England and NHS Improvement, 2018), although there is some debate as to whether this should be 2 years. This time period can be understood for mothers as a time of increased stressors, which can increase the risk of mental health difficulties. Bauer, Parsonage, Knapp, Iemmi, & Adelaja (2014) estimate that up to 20% of women will be diagnosed with a mental health diagnosis during this period with MIND (2020) identifying the five most common diagnoses for mothers in this period as depression, psychosis, anxiety, Obsessive Compulsive Disorder (OCD) and Post Traumatic Stress Disorder (PTSD). It is estimated that perinatal mental health costs the UK economy approximately £8.1 billion each year, (Bauer, Parsonage, Knapp, Iemmi, & Adelaja, 2014), with costs attributed to both mother and baby.

There has been an increase in research into perinatal mental health over the last 10 years, and this has sat alongside an increase in funding in the UK. Catalão, Howard, Jones, & McDonald (2015) highlighted the inequality of NHS specialist perinatal mental healthcare across the UK, estimating up to 50% of mothers, at that time, had limited access to specialist services. As part of the NHS (2016) Five Year Forward View, perinatal mental health services were given £365 million in funding to support availability of specialist services in all localities across the UK, including the increase of Mother and Baby Units (MBUs). This support for specialist perinatal mental health services was built upon in the NHS (2019) Long Term Plan, with continued funding outlined to double the number of women that can be supported and to increase length of service provision.

There is great importance to focusing on perinatal research and understanding the complexities of supporting mothers and their families during this period. Research in this

area has addressed risk factors for mothers in this period, (Blount, et al., 2021; Ross, 2005; (Meltzer-Brody, Boschloo, Jones, Sullivan, & Penninx, 2013), developing evidence-based treatments (Yan, Wu, & Li, 2022; Wittkowski, et al., 2022), understanding the impact of mental health on maternal outcomes (Buultjens, et al., 2021; Yadawad, Ganjekar, Thippeswamy, Chandra, & Desai, 2021) and child outcomes (Burger, Hoosain, Einspieler, Unger, & Niehaus, 2020; Prenoveau, et al., 2017). It is well understood that mothers' mental wellbeing can have adverse impacts for both mother and child in the long term, impacting the attachment relationship they build together. Therefore, getting access to timely, evidence-based support is key for both short-term and long-term outcomes.

In current research, the literature for mothers with depression in the perinatal period is well established, with many systematic reviews able to synthesise the findings in this area. Branquinho et al. (2021) was able to synthesise systematic reviews for perinatal depression treatments, finding CBT to be the most effective for this population in reducing symptoms. Much of the research in this area has varying definitions of mental health for inclusion in their research, with some studies requiring the presence of some symptoms whilst others recruit samples with mental health diagnoses confirmed by clinical interviews. In addition to this, there is a lack of synthesis of long term perinatal maternal outcomes, across varying diagnoses. This limits the comparisons that can be made across mothers who may be accessing specialist perinatal mental health services in the UK.

The systematic review within this portfolio aims to focus on longitudinal outcomes in samples of mothers with clinical mental health diagnoses, to capture women who would be likely to access specialist NHS perinatal mental health services. The review aims to synthesise the research on long-term outcomes for mothers, and to understand if outcomes differ for mothers with different mental health diagnosis. The clinical implications of the review will also be discussed.

The original empirical project, following on from the systematic review, aimed to focus on postpartum psychosis, exploring the evolving relationship between mother and baby following an admission to an MBU for postpartum psychosis. As acknowledged, research into diagnoses other than depression during the perinatal period is limited, and this extends to the research on postpartum psychosis. Research focused on understanding the symptoms and experience of the diagnosis, the risk factors for mothers and treatments, with few studies addressing the relationship between mother and baby. Existing research largely uses cross-sectional methodology, and this limits understanding, as the perinatal period for mother and baby forms the foundation of their attachment relationship, is dynamic, and can change significantly over this period.

The original empirical project aimed to interview mothers from an NHS Mother and Baby Unit, to understand mothers' experiences of their developing relationship over time, both on the MBU and at home, whilst these experiences were occurring. However due to the COVID-19 pandemic in the UK, there were periods of national lockdowns, and NHS restrictions on visiting wards, which limited the access to the MBU for recruitment. The decision was made with the research team to change empirical project due to the time constraints of completing the thesis portfolio.

The empirical project within this thesis portfolio therefore focuses on secondary analysis of data from the SUPEREDEN trial, (Fowler et al., 2018) which investigated the effectiveness of Social Recovery Therapy (SRT) alongside Early Intervention Services for individuals with a First Episode Psychosis, in improving social recovery outcomes. Therapy process data from the trial identified variations in how the intervention was delivered, with three typesof therapy identified (no, partial, full) dependant on the components of SRT received. The study aims to explore the therapeutic components of

different types, to understand the participants who accessed them, and whether varitations in therapy delivery were associated with social recovery outcomes.

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CHAPTER TWO

Systematic Review

Prepared for Submission to the Clinical Psychology Review

(Author Guidelines found in Appendix A)

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Exploring longitudinal perinatal mental health maternal outcomes: A Systematic Review

Victoria Smallman[a]*, Dr Sian Coker[a], & Dr Joanne Hodgekins[a],

[a]Department of Clinical Psychology and Psychological Therapies, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, United Kingdom

*Corresponding author: V.Smallman@uea.ac.uk

Abstract

Background

Mothers who experience acute levels of mental health difficulties in the perinatal period can have long-term impacts on their own wellbeing, and the wellbeing of their child. Perinatal mental health services are an area of growing provision and remain a high priority within NHS England, therefore a review is needed to synthesise and summarise research in this area.

Method

The review follows a systematic approach to collect and screen research for inclusion, resulting in 17 studies of mothers experiencing clinical levels of mental health difficulties in the perinatal period. In total 4452 mothers were included in the review, with diagnoses of depression, postpartum psychosis, and bipolar disorder.

Results

There are a wide range of recovery rates for mothers with perinatal mental health difficulties across a long-term follow-up period, over 1 year postpartum, with 35-94% mothers experiencing remission in depression samples and 36-66% in postpartum psychosis samples.

Limitations

There are a limited range of mental health diagnoses included in this review which limits the generalisability of the results to the wider perinatal mental health population.

Conclusions

Although there is limited research in perinatal mental health, this review has been able to synthesise and create a greater understanding of symptomatic recovery for mothers with depression or postpartum psychosis. Mothers who appeared to struggle most with recovery had further pregnancies, or higher levels of depressive symptoms at baseline, and these should be considered in the provision of clinical services, and intervention time points.

KEY WORDS: Perinatal Mental Health, Recovery, Maternal Outcomes

Exploring longitudinal perinatal mental health maternal outcomes: A Systematic Review

Introduction

Perinatal Mental Health: The current picture

The perinatal period is mostly referred to in current research and in clinical services from conception to 1 year postpartum, (NHS England and NHS Improvement, 2018). Mental illness during the perinatal period is prevalent for approximately 20% of mothers, and can range in severity, with some mothers needing specialist treatment to support their recovery, (Bauer et al. 2014). During this period, there are a range of diagnoses which mothers may experience, with MIND (2020) identifying the 5 most common as; Depression, Anxiety, Postpartum Psychosis, Obsessive Compulsive Disorder (OCD) and Post Traumatic Stress Disorder (PTSD). The Joint Commissioning Panel for Mental Health (2012) report the incidence of Postpartum Psychosis as 2 per 1000 births, severe depressive illness as 30 per 1000 births and PTSD as 30 per 1000 births. Current research in perinatal mental health has a strong focus on mothers with depression, and this is likely to be due to the higher incidence of this.

Acute episodes of these mental health difficulties can have a significant impact on mothers, balancing their own wellbeing alongside trying to meet the needs of their baby. Support for mothers is offered by the NHS through specialist perinatal services, and in some cases can result in an admission to a Mother and Baby Unit (MBU). Mental wellbeing during this period is important to research further, as adverse experiences and mental illness can have long term consequences for both mother and baby. Bowlby's (1969) work on internal working models suggests these are shaped from attachment relationships in early life, such as with primary caregivers, impacting future relationships.

An acute mental health episode in this period can cause seperations of care between mother and child which can impact on the attachment relationship built, although MBUs limit the impact of this.

Perinatal mental health is a high priority within NHS England. This is reflected in the updated National Institute for Health and Care Excellence (NICE) (2020) guidance calling for more research into this area, with an emphasis on psychological interventions focusing on the mother-baby relationship and anxiety. Understanding long term maternal outcomes could form the foundations of these research aims.

As part of NHS England's five-year forward plan, perinatal services have received up to £365 million of funding from 2016/2017 to increase perinatal availability across England, (NHS, 2016). This includes an increase in MBUs allowing mothers to be closer to home and their significant others whilst receiving specialist treatment. In the NHS (2019) implementation plan for Mental Health, funding for perinatal mental health will continue to 2024, increasing the availability of specialist community teams and extending the period of care from 1 to 2 years postpartum, so that there is an increase in mothers and families who can access evidenced based psychological therapies. Increased research within this population will work towards meeting these aims.

Attachment and Perinatal Mental Health

In building the relationship between mother and child, Ainsworth et al. (2015) highlight the sensitivity of mothers to their child's cues as an important component, where mothers who are unable to notice these cues may be seen as unavailable by the child. Mothers who experience acute episodes of mental illness may be physically present, but psychologically absent due to the symptoms they experience during this time, or physically

absent due to their own care needs. Ainsworth et al. (2015) also consider a childs response following a period of seperation, and that they could be rejecting of their mother. From a mother perspective, this could impact the confidence they hold in their parenting ability and may influence their recovery. In contrast, from a childs perspective, a difficult attachment relationship could impact the internal working models that begin to build during this time.

Harder & Davidson (2020) outline the complexity of the relationship between parent and child when considering mental health and longer term child outcomes, including the influence of support, parental stress, and resilience, suggesting a bi-directional relationship which is likely to differ between dyads. In a review of postpartum depression literature, Grace, Evindar, & Stewart (2003) found negative impacts of maternal depression on child cognitive development, such as in object concept tasks and for some behaviours, however this was mixed between studies. Research in this area highlights the importance of building a strong attachment relationship in early years, to support long-term mother and child outcomes, although a degree of flexibility may be needed from services to support individual differences.

Research has explored the impact of maternal depression on infants' behaviours and mother-infant interactions, although Reck et al., (2004) highlights that research in this area is inconsistent. McMahon, Barnett, Kowalenko, & Tennant (2006) explored differences with severity of maternal depression on attachment, finding infants of mothers with chronic depression were more likely to be classed as insecurely attached compared to infants of mothers who had never reported depression. Murray, Fiori-Cowley, Hooper, & Cooper (1996) found that depressed mothers were rated as less sensitive in their interactions with their infants, alongside findings that more sensitive mothers were significantly more engaged with their infant. Murray, Fiori-Cowley, Hooper, & Cooper

(1996) also found significant impacts of mother adversity on sensitivity, although this was approximately twice as common in the depression group that the control group. In both studies, the impact of maternal depression was not always direct on infant interactions and attachment yet can underlie the difficulties.

There has also been emerging research on the concept of mind-mindedness, with Bigelow et al (2018) outlining this as a complex construct that addresses mothers mental state comments in their interactions with their infants. Bigelow et al (2018) found mothers at risk for depression when their infants were 6-weeks made less comments accurately reflecting their infants' thoughts and feelings at age 4-months despite a decreased depression risk. It should be considered that this was not a clinical sample, and findings cannot be compared to mothers with perinatal depression. Further research on mind mindedness in clinical samples would develop understanding in this area.

It is also important to consider the impact of concepts like mind-mindedness for infants on their development and emotional regulation. Fonagy, Gergely, Jurist, & Target (2004) highlight the importance of parental mirroring in interactions with their infants which creates a framework for infants understanding their own emotions and over time faciliates self-regulation. The absence of mirroring can negatively impact development and impair infant regulation, (Fonagy, Gergely, Jurist, & Target 2004). These models highlight the importance of parental interactions with their children in early life and the impact they can have in the long term.

What do we know about long-term outcomes?

Currently research into perinatal mental health primarily focuses on studies using randomised control trials (RCT) to investigate the effectiveness of treatments, and

systematic reviews of these have been able to pool the evidence. Werner et al. (2015) found many studies addressing psychological interventions for the prevention of postpartum depression, with Interpersonal Therapy showing reductions in later depression, in addition to positive outcomes following Cognitive Behavioural Therapy. There have also been reviews on the effectiveness of interventions for anxiety (Callanan et al. 2022).

However, Howard & Khalifeh (2020) outline the limitations in research in this area, including the lack of data for diagnoses other than depression such as anxiety and trauma within these studies, and the lack of reporting for adverse outcomes. Although these studies provide robust evidence to support mothers initial recovery, they don't increase evidence for the impact of mental illness on mothers recovery in the long term, including potential relapses, quality of life and functional outcomes.

There are also a number of studies within perinatal mental health that focus on the impact of mother's mental illness on child outcomes, (Stein, et al. 2014). The first 1001 days, from conception to 2 years old, are considered key to a child's development with healthy attachment building with caregivers considered to be an important process within this (Durkan, et al. 2016). Mothers' mental health in this period can impact on their attachment with their child, and as such, in specialist services, there are treatments that focus on supporting mother-child interactions, with the aim to also increase the bond between them.

Why a review into long-term perinatal mental health?

A review on mothers with clinical diagnoses is needed within the perinatal mental health literature as currently there is a lack of clarity on the long-term outcomes for mothers who experience acute mental health episodes, and access NHS services. At present

studies have mostly focused on individual diagnoses, the effectiveness of psychological treatment for mothers, risk factors for onset of illness during this period and the effectiveness of specific medications. For mothers recruited to these studies, often there is a mix of clinical and non-clinical samples, and it is difficult to ascertain if mothers in these two groups differ. Arguably for research in non-clinical samples, less can be generalised to mothers with acute episodes of illness in NHS services, and evidence for clinical samples is needed to support the evolving specialist perinatal service provision in the NHS.

Additionally, a large proportion of the research in this area appears to focus on perinatal depression, and comparably, less is known about other diagnoses. Although this may be due to a higher incidence of depression for mothers in the period, it is still important to understand outcomes across diagnoses, and key parts of the recovery journey which may be transdiagnostic. A deeper understanding of mothers' recovery journeys over time may be useful for NHS services in supporting all perinatal mothers, to ensure effective interventions are considered.

Some of the learning about long-term outcomes can be understood to an extent from specific diagnoses, such as psychosis, outside of the perinatal period, although adaptations would need to be made to encompass the experience of mother and baby. Lally et al. (2017) in a review of remission rates for First Episode Psychosis, found a pooled remission rate of 57.9%. Ajnakina et al's (2021) meta-analysis focused on long-term social recovery outcomes, finding 32.5% of participants were in employment, and 21.3% of participants were in relationships at long-term follow-up, and considered moderators of these variables. This shows both the complexity of social recovery and the difficulty in achieving this for this population outside of the perinatal period. It will be important to understand the barriers to social recovery, inside and outside of the perinatal period, in further research in this area.

The objectives of the current study are to synthesise and summarise the current research for perinatal mental health difficulties which explore the outcomes of mothers over time, to understand what is known in this area and to highlight where researchers should focus in the future. This review aims to answer the following questions:

1. What are the long-term outcomes for women with clinical levels of perinatal mental health difficulties?
2. Do outcomes differ for mothers with different mental health diagnoses?

The primary outcome for studies included within this review are the rates of relapse over time of participants. Secondary outcomes will focus on symptomatic changes over time, and functional recovery outcomes, such as changes in participants social functioning including work and leisure activities.

Method

This systematic review followed PRISMA guidance and is reported in line with their protocols (Page, et al. 2021).

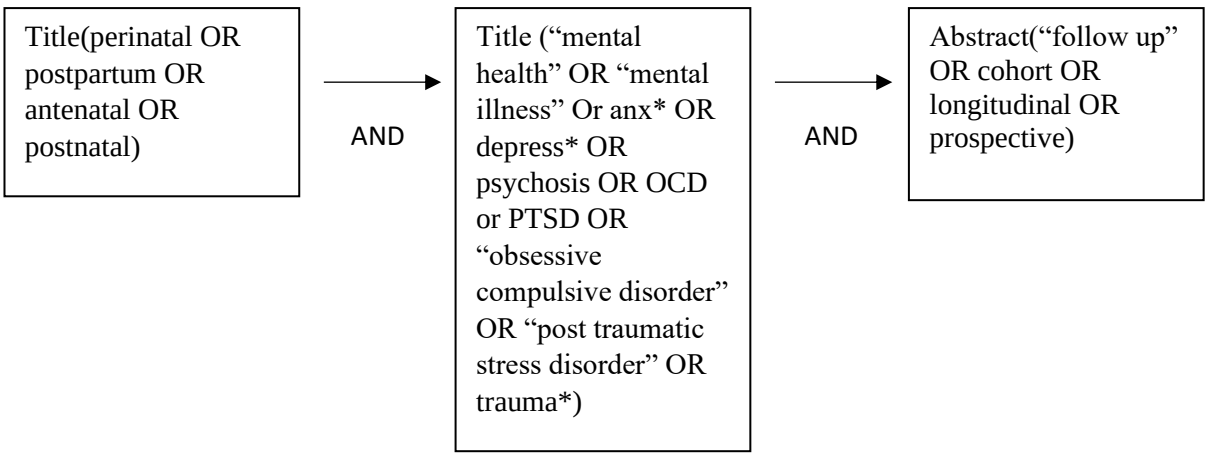
Search Strategy

Prior to developing search terms and finalising search strategy, existing systematic reviews in perinatal mental health were explored. This provided information on the number of databases these reviews used, the names of databases searched, the search terms used, and any synonyms used to capture broad terms. In addition to this, perinatal mental health diagnoses were explored to understand common diagnoses for the perinatal period, to

inform specific search terms. MIND (2020) outline five of the most common perinatal mental health diagnoses; perinatal depression, perinatal anxiety, perinatal OCD, postpartum psychoses, and postpartum PTSD. To appropriately capture perinatal mental health it was considered important to use both specific mental health diagnoses, in addition to broader terms of mental health such as 'mental illness'.

As a result, the search strategy for this review was to use a total of four databases: CINHAL, Medline, PsychInfo and Web of Science. These databases are considered to be robust and provide suitable studies to reach an appropriate level of saturation in answering the research questions. An example of how the search terms were entered in the four databases can be found in figure 1. Mental health and perinatal search terms were sought at a title level and methodology search terms were sought at an abstract level to ensure appropriate papers were not discounted. Some search terms used '*' to capture studies using all variations of that word, such as anx* to capture anxious, anxiety and anxieties. CINHAL, Medline and PsychInfo were searched on 27th February 2022, and Web of Science was searched on 28th February 2022.

Figure 1. *Search terms used in four databases to identify studies for this systematic review*



Eligibility criteria

Table 1. *Showing inclusion and exclusion criteria used in screening process*

Inclusion Criteria	Exclusion Criteria
Studies must be longitudinal prospective cohort (i.e. with at least one follow-up time point)	Studies that have no follow ups beyond pre-post
Studies must have current clinical samples (defined as diagnosis confirmed by a clinical interview)	Studies that have a cohort from an RCT companion study
Studies must have perinatal samples only (Defined from pregnancy to 1 year post birth) Studies must have mothers as the primary sample	Studies that are retrospective
Studies must have a quantitative design	Studies that mental health diagnoses use threshold cut-offs from self-report measures
Studies must be printed in English	Studies where mental health is self-reported
Studies must be peer reviewed	Studies that do not have a full sample with current clinical mental health
	Studies that do not have a full sample with perinatal mothers
	Studies where children are the primary sample
	Studies where professionals are the primary sample
	Studies with no maternal mental health outcomes
	Grey literature

The inclusion and exclusion criteria used for the screening process are outlined in Table 1. The criteria aim to capture cohort studies which monitor mothers' mental health experiences over time, and this focus also allows studies to have high levels of ecological validity, which can be generalised to a wider population. To meet the aims of investigating clinical levels of mental health, studies needed the entire sample of mothers to have a

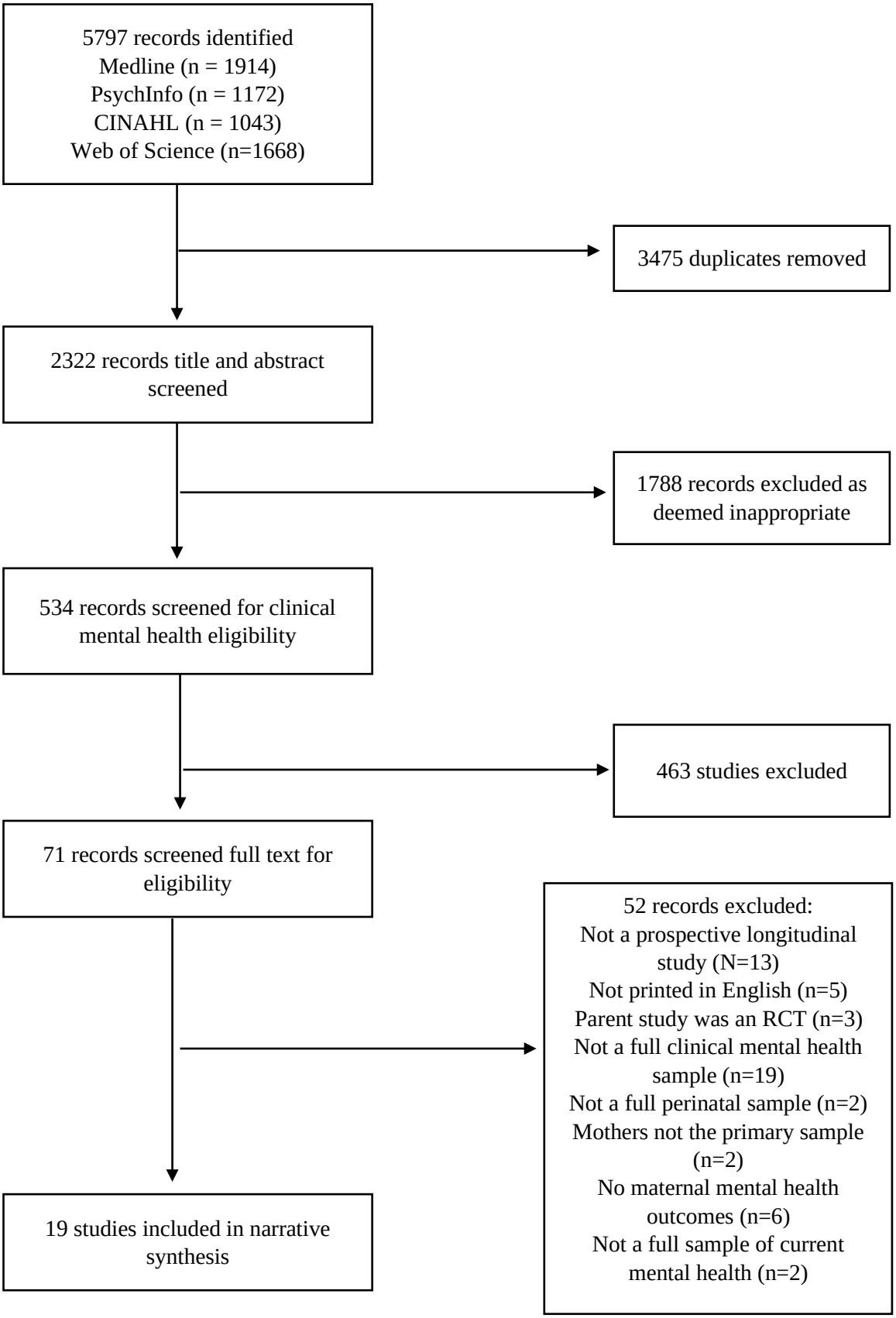
clinical diagnosis that was validated by an interview, and studies using self-report measures to define samples were not included. Non-clinical levels of mental health diagnoses could be considered as a distinct group, that should be analysed separately, as they may not be directly comparable to samples with a current clinical presentation. Additionally, the perinatal period required operationalisation as there are differing understandings of the perinatal period within research literature. However, the NHS considers the perinatal period to be from conception to one year post birth, therefore studies outside of this timeframe were not included, (NHS England and NHS Improvement, 2018). Studies were not excluded based on year of publishing, but they did need to be peer-reviewed and written in english for inclusion.

Study Selection

All studies identified from the search strategy were downloaded into Zotero, a reference management program. This program could store all studies and key details of these safely and allowed for multiple folders to hold studies at each stage of the screening process. This ensured at each time point these could be checked or referred to at a later stage. Figure 2 outlines the flow of studies through the screening process.

After deleting all duplicate studies, the first stage of the screening process was the title and abstract screen. Studies were screened at this level for appropriateness in answering the primary research question, and any studies not meeting this were excluded. All studies that were included at this stage were moved into a separate folder in Zotero for the next stage of the screening process.

Figure 2. *The process of study selection for narrative synthesis adapted from Page et al (2021)*



During the abstract and title screen, it was difficult to ascertain clinical levels of mental health diagnoses, and how these were verified. The second stage of screening was specifically for this, to re-check abstracts, and to check full texts to ascertain method of diagnoses, and to exclude papers if these were not verified by an interview.

Following this, a final pool of 71 studies, held in a separate Zotero folder, were checked against the full inclusion criteria outlined in Table 1. For all studies excluded at this stage, reasons for exclusion were recorded. An initial final sample of 20 were also checked by another researcher, and it was decided to exclude 3 further studies. To ensure quality of screening, a third party reviewed 10% of the full text studies to ensure inter-rater reliability, which was 85.7%, with initial disagreement for 1 study which was resolved. A final sample of 17 studies were included in this review.

Data Extraction

All studies identified for inclusion in this review were put into a separate folder in Zotero, so they could be easily accessed and checked for quality. Following this, data was extracted from each study including number of participants, diagnoses of the sample, key outcomes, and key findings, which are presented in Table 3.

Study Samples

All studies included in the review used purposeful sampling, whereby samples must meet predefined criteria set out by the researchers. All studies must have met the inclusion and exclusion criteria, identifying study designs using longitudinal prospective cohorts. Approximately 65% of the studies included, use between groups analysis, and report this in

their findings. These groups are naturally occurring from within samples such as those who accessed treatment or not during the study (Pope, Sharma, Sommerdyk, & Mazmanian, 2018; Yazici, Kirkan, Aslan, Aydin, & Yazici, 2015), comparing participants with sustained remission to those who relapsed (Rommel, et al., 2021), and comparing different postnatal mental health diagnoses (Gollan, Yang, Ciolino, Sit, & Wisner, 2021).

Table 2. *A summary of quality ratings of studies included in the review.*

	Are the results of the study valid? (6 questions)	**What are the results? (1 question)**	**Will the results help locally? (3 questions)**	**Total Score (10 questions)**
Pope et al. (2018)	5	1	2	8
Buist & Janson (2001)	6	1	2	9
Torres et al. (2019)[a]	6	1	3	10
Freemam et al. (2018)[b]	4	1	1	6
Burgerhout et al. (2017)	5	1	3	9
Nager et al. (2013)	6	1	1	8
Rommel, et al. (2021)	6	1	2	9
Sharma, Smith, & Mazmanian (2006)[b]	4	1	1	6
Rahman & Creed (2007)	6	1	2	9
Gollan et al. (2021)	5	1	1	7
Herzog & Detre (1974)	5	1	1	7
Rohde & Marneros (1993)	5	1	2	8
Shivakumar et al. (2014)	5	1	2	8
Vliegen et al., (2010)	6	1	2	9
O'Brien et al. (2002)	4	1	2	7
Yazici et al. (2015)	4	1	2	7
Boath et al. (1999)[a]	6	1	3	10

[a]Studies with the highest quality ratings [b]Studies with the lowest quality ratings

Quality of Studies

To understand the quality of studies included in this review, the final pool of studies were assessed using the CASP checklist for cohort studies, (Critical Appraisal Skills Programme, 2022). The CASP tool does not provide individual quality ratings, but studies were appraised by the primary researcher by answering the 12 questions set out in the checklist over 3 sections, see table 2 above. Answers for each question are yes, can't tell or no, with yes being scored as 1 and can't tell or no being scored as 0 in table 2. Section A asks whether the results of the study are valid. Two questions have two parts, both needed to be answered yes for this to be scored in the table. Section B asks questions about what the results are and has 2 questions which cannot be answered dichotomously however they do inform the final question, whether the results are believed, and will be represented in Table 2 as one answer. Section C has 3 questions answering whether the results will help locally.

Scores of studies range from 6 to 10 with 10 the highest possible score. All studies have results which were believed, and scores varied on the validity of results in section A or whether the results will help locally in section C. Studies with the lowest quality ratings had both lower validity and were less able to help locally, not scoring on 2 questions from each of these sections. Overall, the quality of studies included was good, with an average score of 8 out of 10. No study was excluded based on quality, although limitations of methodology will be discussed later in this review.

Risk of Bias

Although there is a risk of selection bias, all studies included in this review were selected following a comprehensive search of the literature. All studies underwent a

systematic screening process, and studies in the full-text screen were checked against inclusion and exclusion criteria. In addition to the primary researcher screening, 10% of the full-text screen was checked for reliability and the final pool of studies was also checked by another researcher. These steps have been thought to reduce the impact of selection bias from the primary researcher.

Risk across studies

It is also important to consider the bias studies included, or not included, and the impact this can have on the validity of this review. There is a risk of bias based on the limited searches in grey literature in this area. Where cohorts in the final pool of papers had a companion study, which encompasses the same or a wider subset of participants, this was checked for appropriateness, however no other searches were completed. No studies included were from grey literature. In addition, studies included do not always publish full data at all time points, including individual participant scores on specific outcomes or breaking down grouped scores. As such there is a risk of both reporting and publication bias within this review, which will impact the results presented.

Results

In total 17 papers were included in the final analysis, as these satisfied all inclusion and exclusion criteria. These papers can be found in Table 3, including key findings and diagnoses of mothers included in these studies. Of the 17 papers included, 10 focused on women with depressive disorders, 5 with postpartum psychoses, 1 for mixed bipolar disorder and depression, and 1 just focusing on bipolar disorder. There were a total of 4452 participants included within this review. No cohort studies meeting the inclusion criteria

were found for OCD or PTSD, as any studies including these diagnoses had samples not meeting the clinical criteria. The results will be presented under diagnostic categories over time for the primary outcome of rates of relapse and symptomatic recovery. Short term refers to a follow up period of up to 3 months, medium term up to 1 year, and long term over 1 year of follow up. Another key theme which will be presented in this synthesis are functional outcomes of recovery, including potential predictors of this.

Depression Short Term

There are 5 studies which focus on mothers diagnosed with depression and have at least one follow-up over a short-term period of up to 3 months. Across the studies there was wide variation and mothers considered in remission or below clinical thresholds for depression at this time point ranged from 6%-87%. Pope et al. (2018) focused on clinician and self-reported depressive symptoms, and although symptoms mostly decreased this was variable and inconsistent, relapse rates varied between 13%-29%. However participant retainment at follow up was low and follow up samples were between 27-28% of the sample at baseline.

Table 3. *A summary of studies included in the narrative synthesis*

Study	**Country of Origin**	**Diagnosis**	**Number of participants**	**Length of follow up**	**Outcomes**	**Summary of findings**
Burgerhout et al., (2017)[b]	Netherlands	Postpartum Psychosis	78	9 months postpartum	LIFE, BSI, Recovery	82% of mothers had sustained remission at 9 months follow-up. Women with impaired functioning (26%) has significantly longer episodes, p=0.015.
Herzog & Detre (1974)	USA	Postpartum Psychosis	10	6 months – 12 years from hospitalisation	Recovery, Further Pregnancy	4 subsequent hospitalisations at follow-up not associated with pregnancy. 10 subsequent pregnancies, 3 needed outpatient treatment.
Nager et al., (2013)	Sweden	Postpartum Psychosis (First Episode)	3140	Baseline, 1, 2, 3, 4, 5, 6-10, 11-15, 16-20, 20+ years	Recovery	Incidence rate of readmission for any psychiatric disorder was between 0.45-0.52 per person, per year between follow up years 1-5.
Rohde & Marneros (1993)	Germany	Postpartum Psychosis (First Episode)	86	12-41 years	Further Pregnancy, Recovery	36% of mothers had sustained remission at average 25.6 year follow-up. 51% had a further pregnancy, and 25% of these mothers experienced a relapse
Rommel et al., (2021)[b]	Netherlands	Postpartum Psychosis (First Episode)	106	4 years postpartum	Recovery, Further Pregnancy	68% of mothers sustained remission during 4-year follow-up. Median time to relapse in episode outside of postpartum was 20.3 months.

Table 3. *Continued*

Study	Country of Origin	Diagnosis	Number of participants	Length of follow up	Outcomes	Summary of findings
O'Brien et al., (2002)[b]	England	Postnatal Depression	23	Baseline, 6 months (companion study), 7 years	WLFLQ-M, DAS, Recovery	48% mothers of mothers were in remission at a 7-year follow-up, 67% of mothers who were depressed at 7-year follow-up were also depressed at 6-month follow-up
Boath et al., (1999)[b]	England	Postnatal Depression	60	Baseline, 3, 6 months	EPDS, HAM-A, DAS, WLFLQ-M, Contacts	25% of mothers experienced remission at 3 months follow-up and 46.7% of mothers experienced remission at 6-month follow-up.
Torres et al., (2019)	Spain	Major Depressive Disorder	165	2, 6, 12, 18, 24 months	EPDS, HRSD, STAI, SRS, MAS, LIFE, Recovery	Probability of full remission was 30.2% at 6 months, 66.3% at 12 months and 90.3% at 24 months. Mean time to full remission was 49.4 weeks.
Pope et al., (2018)[ab]	Canada	Major Depressive Disorder	130	36 weeks pregnant, 1, 2, 3, 6, 12 months postpartum	EPDS, HRSD, Recovery	64.7%-72.2% of mothers experienced remission measured by self-report across 12-month follow-up. 85.2%-94.6% mothers experience remission across 12-month follow-up measured by clinician report.
Buist & Janson (2001)[b]	Australia	Major Depressive Disorder & Adjustment Disorder	45	Baseline, 2-3.5 years postpartum	HRSD, BDI, STAI, SEI, SSQ, DAS, PSI, CBC, MIIS	58% of mothers had current or partially treated depressive episode, 13% had a personality disorder diagnosis, and 13% had experienced readmission at follow-up

Table 3. *Continued*

Study	Country of Origin	Diagnosis	Number of participants	Length of follow up	Outcomes	Summary of findings
Freeman et al., (2018)[a]	USA	Major Depressive Disorder	63	(Baseline, every 4 weeks in companionstudy) 8-18 year follow up	HRSD, Diagnoses, Further Pregnancy, Recovery	35% of mothers remained in remission following depressive episode. 36.5% of mothers had a subsequent pregnancy
Rahman & Creed (2007)[ab]	Pakistan	Depression	129	Baseline, 3, 6, 12 months postpartum	Life Events Score, SRQ, BDQ, Recovery	6% of mothers experienced remission at 3 months follow-up, 24% at 6 months follow-up and 38% at 12 months follow up. 57% of mothers were depressed at all 3 follow-up points.
Shivakumar et al., (2014)	USA	Major Depressive Disorder	24	Mid pregnancy – 2 months postpartum	EDPS, IDS-C, Symptoms	Mean depression scores for mothers significantly decreased from baseline to follow-up, $p<0.001$
Vliegen, et al., (2010)[b]	Belgium	Major Depressive Disorder	55	Baseline, 32-57 months later	DEQ, BDI, Recovery, Symptoms	39% of mothers met criteria for depression at follow-up. Mothers depressed at follow-up were significant more depressed at baseline.
Yazici et al., (2015)[ab]	Turkey	Depression	73	1st trimester – 6 weeks postpartum	EPDS, GHQ-28, GAF, PSS, Recovery	0% of mothers who had treatment for depression in pregnancy had depression at follow-up. 92% of mothers who had no treatment in pregnancy had a depressive disorder at follow-up

Table 3. *Continued*

Study	Country of Origin	Diagnosis	Number of participants	Length of follow up	Outcomes	Summary of findings
Gollan et al., (2021)[ab]	USA	Major Depressive Disorder & Bipolar Disorder	240	2, 12, 26, 52 weeks postpartum	SIGH-ADS, Symptoms	20% mothers report anhedonia at week 2, 16% at week 12, 19.46% at week 26 and 22.22% at week 52. Twice as many mothers reporting anhedonia were diagnosed with BD than MDD.
Sharma, Smith, & Mazmanian (2006)[b]	Canada	Bipolar Disorder	25	Pregnancy - 1 month postpartum (9 visits)	HRSD, YMRS, Medication, Recovery	40% of mothers relapsed with a mood disorder by follow-up at 1 month postpartum.

To note. EPDS, Edinburgh Postnatal Depression Scale; HRSD, Hamilton Rating Scale Depression; BDI, Beck Depression Inventory; HAM-A, Hamilton Anxiety Rating Scale; STAI, State Trait Anxiety Inventory; PSS, Perceived Stress Scale; SSQ, Social Support Questionnaire; DAS, Dyadic Adjustment Scale; PSI, Parenting Stress Index; CBC, Child Behaviour Checklist; SRS, Suicidal Risk Scale; MAS, Marital Adjustment Scale; LIFE, Longitudinal Interval Follow-up Evaluation; BSI, Brief Symptom Inventory; YMRS, Young Mania Rating Scale; SRQ, Self Reporting Questionnaire; BDQ, Brief Disability Questionnaire; SIGH-ADS, Structured Interview Guide for the Hamilton Depression Rating Scale; WLFLQ-M, Work Leisure Family Life Questionnaire; GHQ-28, General Health Questionnaire-28; GAF, Global Assessment Functioning; MIIS, Mother Infant Interaction Scale; DEQ, Depressive Experiences Questionnaire; SEI, Self Esteem Inventory; IDS-C, Inventory of Depressive Symptomology

[a]Studies with cohorts from companion studies

[b]Studies that have between groups analysis, from natually occuring groups within their cohort

Boath et al. (1999) found that severity of depression was influenced by treatment service, with a specialist day unit providing signifcantly higher levels of improvement in comparison to routine care for mothers with depression at 3 months follow-up ($p<0.003$). Addressing this sample as a whole, only 25% of mothers were categorised without depression at 3 month follow-up. Mothers with diagnosed depression in pregnancy were also explored, comparing those who received treatment to mothers who did not, finding mothers receiving psychiatric treatment during pregnancy did not progress to postpartum depression, compared to 92% of the no treatment group having a depressive episode in the postpartum, (Yazici et al. 2015). However it must be acknowledged that it is unclear what treatment this group received and that the no treatment group represented 71% of the sample, therefore the findings should be taken with a degree of caution.

Depression Medium Term

There are 5 studies which focus on mothers with depression and have at least one follow-up over a 3-12 month period. There was also a wide range at this time point of mothers considered to be in remission from depression, from 39%-94.6%. Boath et al. (1999) found remission from depression continued to improve from 3-6 month follow up, with an increase from 25% to 47%, although statistical tests were not run to determine if differences were significant over time. Rahman & Creed (2007) also found improvements in remission rates over time from 24% at 6 months to 38% at 12 months. Rahman & Creed (2007) also explored mothers who were depressed at all follow-ups (57%) finding these mothers had significantly increased depressive and anxiety symptoms alongside increased levels of disability compared to mothers who experienced remission. In contrast Torres et al. (2019) focused on probability of remission over time, finding rates of both partial and

full remission improved from 6 to 12 months, and the mean time for mothers to reach full remission from depression was 49.4 weeks.

Depression Long Term

There are 5 studies which focus on mothers with depression and have at least one follow-up beyond a 1-year period, although this does vary with the longest follow up period being 18 years. Mothers considered to be in remission during this period varies from 35% to 94%, although this can include periods of being both well and unwell during the follow-up period. Vliegen et al. (2010) found significant decreases in depressive symptoms over time and compared depressed mothers at follow-up to mothers who were not, finding depressed mothers were significantly more depressed at baseline ($p<0.01$) and had significantly longer episodes of depression ($p<0.05$). O'Brien et al. (2002) followed up mothers over a period of 7 years, and found that 3/23 mothers reported no remission during this period. In comparison Freeman et al. (2018) found in their study following mothers for up to 18 years that 35% did not experience another episode at all during this time whilst 6% reported they have been unwell for at least 75% of the follow up period.

Psychosis Short and Medium Term

There are no studies which focus on mothers who have a diagnosis of postpartum psychosis and have a follow-up period of 3 months or less and only one study collected medium term recovery follow-up data. At 9 months Burgerhout et al. (2017) found 64/78 (82%) of mothers in their sample sustained remission from their episode, whilst 13 relapsed within a 9 month period and 1 mother reported never achieving remission from

illness. They also report within their sample the median time from remission to relapse was 53 days.

Psychosis Long Term

There are 4 studies which focus on mothers with postpartum psychosis and have a follow up period of greater than 1 year. Across the studies the follow-up periods had a wide range, and the rates of remission were reported differently for each study. Rohde & Marneros (1993) found 36% of their sample had no further episodes over an average follow up period of 25.6 years, in contrast to 18% of mothers experiencing a further 2-3 episodes and 46% experiencing 4 or more further episodes. In contrast Rommel et al. (2021) found remission rates to be much higher in their study, with 66% of mothers not experiencing a relapse over 4 years, and 2 mothers only experienced a relapse exclusively in a later pregnancy. However, their sample did focus on mothers with first episode postpartum psychosis and the recovery trajectories may not be comparable to mothers with mothers who experienced onset of psychosis prior to pregnancy.

Herzog & Detre (1974) followed 10 mothers with follow-up on average 6.1 years after baseline, there were 4 further hospitalisations, and 8 outpatient treatments. However it was unclear in their reporting whether this number was exclusively as confirmation from mothers of requiring this or if this included multiple episodes of care for individual mothers. In contrast Nager et al. (2013) looked at incidence rate of readmission outside of the perinatal period, and found small variances in incidence rates within the first 5 years (0.45-0.52) per person, per year which then decreases steadily after this time falling to 0.2 after 20 years.

Bipolar Disorder

Sharma, Smith, & Mazmanian (2006) followed mothers with a diagnosed bipolar disorder from pregnancy to 1 month postpartum to explore any reported mood episodes in the first 4 weeks postpartum, finding a relapse rate of 40%. However, it is acknowledged within the study that it has low statistical power, and results should be interpreted cautiously. Gollan et al. (2021) included a mixed sample of mothers with 43% diagnosed with a bipolar disorder and 57% diagnosed with depression, focusing on the presence of anhedonia from 2 weeks to a year postpartum. Gollan et al. (2021) found across 1 year that 35.9% of mothers with bipolar had a high probability of endorsing anhedonia. In contrast 28.1% mothers with depression had an increasing likelihood of anhedonia over 12 months.

Predictors of Recovery

Two studies explored potential predictors of recovery in perinatal mental health. Rommel et al's (2021) study of mothers with postpartum psychosis found no significant potential predictors of relapse. In contrast, Torres et al. (2019) found a number of significant potential predictors of full remission in mothers with a postpartum depressive episode, including having no financial problems, no prior depressive episodes, and having onset of episode after the birth of their child. There are limited studies focusing on predictors of recovery and more research needs to address this issue across all perinatal mental health diagnoses, particularly considering the wide range of remission outcomes.

Functional Outcomes of Recovery

There are 9 studies that address functional outcomes of recovery, with some focusing on further pregnancy, whilst other studies included self-report measures as secondary outcomes. Burgerhout et al. (2017) focused on functional outcomes in psychosis alongside relapse, finding at 9 month follow up 74.4% of mothers recorded good overall functioning, and mothers with impaired functioning had a significantly longer duration of episode. In depression studies, functioning was also found to have an impact on mental health, with Rahman & Creed (2007) finding mothers with persistent depression across 12 months had significantly higher disability scores, compared to those who experienced remission. There is limited data collected within the studies included in this review which consider the impact of functional recovery alongside symptomatic recovery.

There are 4 studies which record additional pregnancies for participants, 3 of these studies samples are women with postpartum psychosis, accounting for 60% of all postpartum studies in contrast to one study focusing on depression, accounting for 7.7%. Studies report further pregnancies from the sample, with studies focusing on postpartum psychosis also reporting the impact of this on relapse of symptoms. Herzog & Detre (1974) report from their sample of 10 women there were 10 further pregnancies, some of these appear to be multiple pregnancies, of which 3 women sought further treatment associated with this. In contrast, Freeman et al. (2018) focused on mothers with depressive disorders and found 27% of the sample had a further pregnancy prior to the follow-up, although this ranged from 8-18 years, and that from the entire sample 57.8% of mother reported their experiences with mental health problems shaped their family planning.

Overall Findings

Although there are 17 studies included in this analysis, longitudinal studies in this area remain limited, with the largest focus on mothers with depressive disorders, followed by mothers with postpartum psychosis. More research is needed to understand a wider range of mental health diagnoses which can impact mothers in the perinatal period such as anxiety, OCD and PTSD. The current review shows a wide spread of recovery rates, and this heterogeneity is present through short to long term follow-ups. The studies do highlight that full recovery is possible for mothers experiencing acute mental health episodes during this time, however more research is needed to understand potential predictors of full recovery and to assess a broader range of outcomes.

Discussion

Summary of evidence

As a whole, most studies reported recovery outcomes in relation to subsequent episodes of mental illness during the follow up period. The duration of follow-up has great variability with studies reporting short term outcomes (up to 3 months postpartum) to long term outcomes (over 1 year postpartum) although some studies had follow-ups exceeding 20 years. Therefore, to be able to synthesise the findings of studies, analysis was split into 3 follow-up periods (short, medium, and long term) in an attempt to make more valid comparisons between recovery rates. Different studies did operationalise relapse in different ways, with some using subsequent admissions or support provided, some studies using clinical cut-offs from outcome measures, and some studies do not disclose how they operationalised relapse. Therefore, some caution should be applied to the findings within this review.

For studies focusing on mothers with postpartum psychosis, sample sizes were mostly small (<106), with the exception of Nager et al's (2013) sample of 1340 mothers over a follow up period of 20 years. Rates of relapse across these studies were variable although largely studies addressed long-term recovery with 36%-66% of samples found to experience sustained remission from their initial episode. Some of the studies explored factors which may influence relapse, with functioning reported to be a significant factor (Burgerhout et al. 2017). Predictors of recovery for mothers with postpartum psychosis are limited, and require greater research to support the growing mental health service provision in this area.

In contrast studies focusing on mothers with depression addressed recovery fairly evenly across short, medium and long-term follow-ups, although they had comparable sample sizes to postpartum psychosis studies. Overall studies also report wide ranges of relapse rate across all three follow-up periods, with some studies looking at probailities of remission (Torres et al. 2019) or comparing mothers with differing levels of recovery, (Rahman & Creed, 2007). Mothers not receiving treatment for depression were significantly more likely to experience a depressive episode during the postpartum, (Yazici et al. 2015). Mothers who were depressed at the time of follow up were found to be signficantly more depressed at baseline and have significantly longer depressive episodes, (Vliegen et al. 2010). This highlights the importance of both early screening for these mothers in mental health services and timely treatment to support their recovery journey. As funding has increased in perinatal mental health services in England which has also increased the availability of local specialist services, timely assessment and treatment is more likely, and it is possible recent studies exploring this will have more positive outcomes.

What are the long-term outcomes for women with clinical perinatal mental health difficulties?

In studies reporting long-term recovery rates for mothers with depression there was a 60% difference in the lowest (35%) and highest rates of recovery recorded (94%). Although a substantial difference was found at all time points, the lowest recovery rate in short term-follow up studies of 6% is much lower in comparison to long-term studies. This highlights the need in clinical research in this area to collect outcomes across the perinatal period, up to a long-term period and to understand how the recovery of mother's changes over time and the factors which may predict or influence this change. This may indicate in clinical practice key moments in the perinatal period to target interventions for mothers for the most effective rates of recovery.

In contrast to mothers with depression, studies focusing on mothers with postpartum psychosis with long-term follow-ups have a smaller amount of variance in recovery rates, 36%-66% of samples sustained remission. However, studies reporting relapse in this population included other mood disorders such as depression, (Rommel, et al. 2021), as a sign of relapse for mothers. Therefore it is hard to conclude from this review if mothers experienced sustained remission from broader mental health, or sustained remission from psychosis. However these remission rates reflect current health advice that recovery can take up to 12 months, although mothers may experience another episode, most likely in the context of another pregnancy (NHS, 2020; Royal College of Psychiatrists, 2018).

Most studies which focused on mothers with depressive disorders addressed symptomatic outcomes, recording depressive symptoms through the use of outcome measures for mothers to self-report, such as the EPDS. Most studies report a statistically

significant reduction in depressive symptoms over time. Although when we consider this in context, studies follow up times vary up to 45 months postpartum, so it can be difficult to directly compare the longevity of sustained reductions over time, and these results should be viewed with caution. When considering what may influence this reduction Boath et al. (1999) found a positive impact of mothers seeking support from a specialist unit, compared to routine care with GPs and health visitors. This provides evidence that supports the increase in Mother and Baby Units, and specialist perinatal mental health services across the UK over the last 10 years.

Some studies have included measures of functional recovery although many of these appear to be maternal outcomes collected as secondary data, and the extent to which authors analyse or comment on the impact of these in relation to symptomatic recovery is limited. Women who have persistent depression across a 12-month period appear to have significant differences in prenatal outcome measures reported on the Brief Disability Questionnaire, (BDQ; Rahman & Creed, 2007). This is important to explore further as prenatal differences could lead services to screen for difficulties and provide support at an earlier stage for mothers, which could have a positive impact on both mother and child in the long term. Additionally, the BDQ can also indicate a level of social disability for mothers, and significantly higher levels of social disability could suggest alternative therapies, such as Social Recovery Therapy (Fowler et al., 2018) which could be beneficial for this subgroup.

For the studies which reported pregnancy outcomes, all of these had long-term follow ups. They focused on the number of mothers with an additional pregnancy following the initial pregnancy from which they would be recruited to the study. Studies focusing on mothers with psychosis explored the association of relapse on having another

child, both in terms of those seeking further treatment (Herzog & Detre, 1974), experiencing another episode (Rohde & Marneros, 1993), or directly comparing groups of mothers with recurrence or not and the number of subsequent children (Rommel et al. 2021). The final study asks mothers with depression if their mental health impacted on family planning, (Freeman et al. 2018). As a whole, this shows the impact of mental health in this period in the long term, with many mothers choosing not to have another baby after a period of perinatal mental illness. Perinatal services can support women at risk of illness from conception, and some perinatal mental health services also offer pre-conception counselling to women at risk of perinatal mental illness (South London and Maudsley NHS Foundation Trust, n.d.), with Howard & Khalifeh (2020) suggesting this is an important part of recovery.

Do outcomes differ for mothers with different diagnoses?

Overall, there is limited research to answer this question, as studies primarily were mothers with depression, and can only be compared to mothers with postpartum psychosis as a group as the final 2 studies included in the review were different diagnoses. It is important to consider why research in this area is heavily weighted for mothers with depression, and the impact this can have on effective service provision.

In relation to recovery, studies recruiting mothers with postpartum psychosis largely followed mothers for long-term follow up, with the shortest period of follow-up being 9 months postpartum. In contrast, studies recruiting mothers with depression had a much more mixed profile, with even distribution from short to long-term follow-ups.

For long-term recovery, both mothers with depression (35%) and postpartum psychosis (36%) had comparable minimum levels of remission across their samples. This shows mothers should hold hope for their recovery, with full and sustained remission being possible. However, maximum levels of remission reported for these populations shows much larger differences with depression samples reporting a much higher maximum recovery rate (94%) in comparison to mothers with postpartum psychosis (66%). This may reflect that mothers who experience postpartum psychosis may also experience co-occurring or later mood episodes, which could be reported as a relapse in their mental health. Clinically this is important to consider within service provision, to ensure mothers with postpartum psychosis have appropriate levels of support in place as they may be more likely than mothers with depression to experience relapses in their mental health. This also may be an important factor to consider within the design or analysis of interventions for mothers with postpartum psychosis, ensuring there is a long-term follow up to understand if intervention effects are maintained over time.

Strengths

A key strength of this review is that the methodology followed PRISMA protocols (Page et al. 2021) which outlines a systematic approach in both the screening of studies from initial searches, to the reporting of findings from the synthesis. Alongside these protocols, 10% of the full text screening was also completed by another researcher with high levels of inter-rater reliability (85.7%) and the disagreement was resolved through further discussion. The final pool of studies was discussed in the research team to ensure all met criteria. This ensures a good level of reliability from the search strategy and

screening process for future replication ensuring the validity of studies included in the review in answering the research question.

In understanding appropriate inclusion and exclusion criteria, the decision was made to exclude studies where mental health diagnoses were not confirmed with a clinical interview. There are many research studies in this area that have mixed operationalisation of mental health, ranging from confirmed clinical diagnoses through clinical interview to mothers above threshold cut off points on self-report questionnaires. This inclusion criteria aimed to identify mothers in studies that would be eligible to access perinatal mental health services so that the review could be generalised to some extent to this population. Mothers with self-reported mental health may not be eligible for mental health services if symptoms didn't meet the criteria for a diagnosis, therefore would limit the reliability of comparisons made between studies in the review and the generalisability to clinical services.

Limitations

It is important to consider the limitations of the current review, as these will influence the strengths of the conclusions drawn. For this review over 450 studies were excluded as mothers did not have confirmed clinical diagnoses, and it is possible that some of these studies would have been beneficial in answering the research questions. However, it is also possible including these studies would have distorted the results, as this group may be distinctly different in their experiences and not directly comparable. Future studies exploring clinical samples may benefit from comparing these groups in more detail to understand if they should be analysed together, or separately.

Another consequence of the requirement for mental health diagnoses needing to be confirmed through a clinical interview is that this also limited the range of mental health

diagnoses included. Largely the papers included in this review focused on perinatal depression, then postpartum psychosis, with a few additional studies addressing bipolar disorder. However, this only includes 2 of the 5 most common perinatal mental health difficulties outlined by MIND (2020). It is possible that mothers with PTSD, OCD, and anxiety are harder to recruit to research studies, or that there is limited funding encouraging research of these difficulties. There may also be important perinatal experiences that are not captured in the synthesis of results, such as the impact of birth trauma, as they are more common in mothers diagnosed with PTSD. The impact on this review is that conclusions have a limited generalisability to the wider population of perinatal mothers.

There is mixed quality in the methodology of the cohort studies included in this review. Although the CASP tool (Critical Appraisal Skills Programme, 2022) was used to critique the quality of studies, this is not intended to provide individual quality ratings, and no study was excluded based on quality. The average score on quality in the review was 8.1 out of a possible 10, although this did range between 6-10. This evidences that largely studies included were of reasonable quality, although quality ratings were only rated by the primary researcher, therefore a second researcher could enhance the reliability of these scores. Most studies included were robust in their methodology, however there were mixed sample sizes ranging from 10 to 3140. In addition, there was limited reporting of confounding variables and confidence intervals, and individual data points on differing outcomes. As such the studies with smaller cohorts may have overstated their findings, which would also lead to possible overestimation of outcomes within this review.

There was no grey literature searches completed within this study as formal searches into this area were beyond the scope of this review. The only searches completed were limited to companion studies to check suitability, and it may have been helpful to

widen this to reference lists of studies included. Some of the authors included within this review were part of multiple studies, it is possible that contacting specific authors directly may have ensured full saturation of research in this area. The review may be subject to publication bias and conclusions drawn should be viewed with caution.

There were some difficulties synthesising the results from the range of studies included in this review due to several factors such as, outcomes reported, follow up intervals and mental health diagnoses. Therefore, the decision was made to analyse in relation to length of follow-up however in the long-term follow up group studies ranged with the minimum follow up of 1 year postpartum up to a maximum of 20 years. What can be said at these time points is vastly different and as such this can skew the synthesis of the other factors, as data collected at the range of time points might not be comparable.

It is also important to consider in appraisal of research in perinatal mental health that studies were undertaken in vastly different years, with psychosis studies included having a 50-year range in publication date, and depression studies have a 20-year range. During these time periods care provision across the NHS has changed significantly and studies from more recent years may have mothers who were able to access newer evidence-based treatments. Therefore, it could be considered invalid in some ways to compare mothers from vastly different time periods, and the results should be viewed with caution.

It was notable that few studies in this review included child long-term outcomes alongside maternal outcomes. Although child outcomes are well researched in other study samples (Deans, 2020; Gentile, 2017; Rinne, et al., 2022) it would be beneficial for future research to include mothers with clinical mental health diagnoses in this period and include child outcomes. It would also be beneficial for research within this population to explore relational outcomes between mother and child in the long-term. These research areas could

enrich understanding and consider any association between maternal improvements both in symptomatic and functional recovery and child improvements in the long term.

There is wide variability in the country's studies were undertaken in, which includes countries across Europe, North America, Oceania, and Asia. In comparing and synthesising these studies, we must consider the diversity of cultural and healthcare practices regarding the generalisability of findings. Mulatu & Berry (2001) discuss the similarity of healthcare in 'western' countries in that medical practices are mostly comparable, and often include standardised training, although they note differences in 'non-western' countries often with spirituality encorporated. For this review, largely studies were undertaken in 'western' countries (88.2%) and findings should not be generalised beyond 'western' countries as practices are likely to differ.

It must also be considered that the current review synthesised all the studies regardless of country of origin. Therefore, some of the comparisons made may lack some validity due to the contrasting healthcare systems, cultural beliefs, and therapeutic approaches. Some caution should be given to generalising the findings to 'western' countries, to consider the impact of diversity on the findings.

Another point to consider in terms of representation is that studies included in the review use purposeful sampling, in that predefined criteria is set out to include specific characteristics for participants. Whilst largely samples encompass many characteristics of the wider population, participants in these samples are those who consent and have specific diagnoses which can exclude comorbidity and those more acutely unwell. It could be argued that the populations recruited within the samples are filtered for clarity within the research, and they may lack a level of representation. Therefore, the results can be generalised to an extent to the wider population, however a level of caution should be

applied to account for sampling method. Future research may consider the use of anonymised clinical records to overcome some of these difficulties.

Clinical Implications

In postpartum psychosis samples, mothers who struggled most with recovery were those who had impaired daily functioning (Burgerhout et al. 2017) and those who had a further pregnancy (Rohde & Marneros, 1993; Herzog & Detre, 1974). Although Burgerhout et al. (2017) report aproximately two thirds of mothers who experienced relapse did not report good functioning, it was unclear on the relationship between these two variables. In contrast, studies who report further pregancy, addressed the link from this to further episodes of illness or help-seeking from services. There is some evidence within this review that for this population, functional recovery may play a role in symptomatic recovery, and maintained remission. Clinically services should consider providing enhanced support to women around conception, if there are known previous episodes of postpartum psychosis, as the risk of relapse may be hightened. It is indicated that mothers may benefit from screening of daily functioning throughout their recovery journeys so that more support can be offered to women struggling with social recovery. This could also indicate the benefit of social recovery approaches for this group, with known benefits for individuals with first episode psychosis, (Fowler et al. 2018).

In depression samples, mothers who had higher levels of depressive symptoms at baseline were more likely to be depressed at a long-term follow-up, and have longer depressive episodes, (Vliegen, et al., 2010). Although service provision has changed over the last 10 years, with increasing availability of specialist services, this could indicate the importance of early or enhanced support to these mothers. More research may be needed to understand a symptomatic cut-off where women could be considered at an increased risk,

although, Yazici et al. (2015) show early treatment in pregnancy could limit the presence of depressive episodes postpartum. Clinical services may benefit from an assertive outreach approach to this group of women with depressive episodes, as high levels of early support could have a positive impact on further support needed in the long term.

In addition to these factors Torres et al. (2019) explored potential predictors of recovery from depressive episodes in the perinatal period, finding mothers with no prior history of treated depression attaining a full recovery quicker. This indicates for women experiencing first episodes of depression in this period, that long-term recovery outcomes appear positive. However, it also indicates that women with prior depressive episodes are at an increased risk and this group should be offered targeted support from services. Specialist mental health services should consider the provision they can offer to this group, and the accessibility of support once pregnant mothers report prior depression episodes, including adding this to screening tools for maternity services.

Future Research

Although the focus of studies included within this review is on the long-term maternal outcomes, a key limitation of these studies is that only two included predictors of recovery. Torres et al. (2019) found significant predictors of recovery in postpartum depression, whilst Rommel et al. (2021) found no significant predictors in postpartum psychosis. The studies largely do not record the context which supports mothers recovery of which this knowledge could benefit clinical services.

Conclusion

This review highlights a range of long-term outcomes of mothers with perinatal mental health difficulties. It is possible due to the limited research in this area, that this review may pose more questions than answers. There is a greater understanding of symptomatic recovery over time for mothers, when they might experience a relapse, the impact of these experiences on family planning and the changes in symptomatology over time. These findings could help to inform service provision, and where resources may be most beneficial for mothers in this period.

However, there are also lots of gaps in the current literature, including limited knowledge on the impact of mental illness on more functional outcomes of recovery such as returning to work, resuming day-to-day activities and responsibilities, and having children following an episode of mental illness in the perinatal period. There were only 2 studies which addressed predictors of recovery, and only one of these found significant associations. This highlights the need for more research into long-term recovery in perinatal mental health, particularly as the NHS England and NHS Improvement (2018) implementation plan has ongoing funding to support perinatal services, including the increase in provision locally and extention of support from 1 to 2 years postpartum.

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CHAPTER THREE

Bridging Chapter

Word Count (excluding references): 1169

Bridging Chapter

The systematic review synthesised research from 17 studies to understand the long-term outcomes for mothers with clinical mental health problems. In total there were 4452 mothers included in the review. The study samples mostly recruited mothers with depression, with the second most common diagnosis as postpartum psychosis. Study follow-ups ranged vastly and were understood as short-term (up to 3 months), medium-term (3 to 12 months), and long-term (more than 12 months) outcomes.

Overall studies addressing long term recovery in perinatal mental health were limited, with 5 depression studies collecting long-term outcomes and 4 psychosis studies. Long-term rates of recovery varied across depression studies, ranging from 35% to 94%, although follow up rates also ranged up to 18 years. Some studies also found differences in mothers who sustained remission, with Vliegen et al. (2010) finding mothers who were depressed at follow-up, approximately 3 years, were more depressed at baseline, in comparison to those who did not meet the criteria for depression. The wide range in long term recovery rates were somewhat comparable to studies with postpartum psychosis samples, 36% to 66%, although this only represented 2 studies due to recovery reporting in other studies.

Some of the studies included within the systematic review also collected outcomes of functional recovery, although mostly these were secondary outcome measures, or later reports of further pregnancies. Burgerhout et al. (2017) collected functional outcomes alongside rates of relapse in psychosis, finding an association between mothers reporting impaired functioning, and longer duration of episode. Although some studies reported further pregnancies, more research is needed into the impact of mental health experiences in the perinatal period on family planning.

The review provides some evidence for the impact of perinatal mental health on functional recovery, althoughthis remains very limited and more research is needed to develop a deeper understanding of functioning in the long-term within this population. Another key part of recovery for mothers in this period, is building their relationship with their baby. In postpartum psychosis, little is know in the literature about this developing relationship, and few studies have addressed this with prospective longitudinal methodology. As discussed the initial empirical project would have focused on this issue, although difficulties with recruitment during the Covid-19 pandemic meant that this study was stopped due to the timeframe of the thesis.

The Empirical Project

The empirical project included in this thesis focuses on individuals with psychosis (not in the perinatal period) who recieved Social Recovery Therapy as part of the SUPEREDEN research trial (Fowler et al., 2018). There were variations in the delivery of the SRT intervention in the trial, described as 3 differing ‘doses’ (no, partial, full) dependant on the components of SRT participants receivedAlthough Fowler et al (2018) found the intervention to be effective in comparison to the control group, less is understood about why differing groups of participants accessed the therapy differently. As part of operationalising this therapy for use in clinical settings, more research is needed to understand the accessibilty of the treatment, and to understand if there is an association between SRT and functional recovery.

Traditionally, studies exploring the variations in the delivery of interventions have adopted a dose-response approach to analysing data. This concept will now be considered in more detail.

Dose Response Effect

The dose-response effect, which outlines the relationship between the dose of a substance, such as medication, and the response this can have on an individual, such as improvement in symptoms, has been widely researched and used in biological sciences such as psychopharmacology. Within the psychotherapy field, the first adaptation of this model was made by Howard, Kopta, Krause, & Orlinsky (1986) who operationalised doses using number of therapy sessions, finding a rapid improvement initially and a reduced effect with increasing sessions, represented as a negative accelerating curve. In contrast Barkham, et al., (1996) and Barkham, et al., (2006) using time limited therapies proposed dose effect in a Good Enough Level (GEL) model that proposes that improvement and length of treatment are linked, insomuch that when individuals in therapy have improved enough, they discontinue.

Both models have been subsequently evaluated in the literature. Stulz, Lutz, Kopta, Minami, & Saunders (2013) found evidence for both models in their study, using the GEL session by session method, finding initial rapid increases, and a reduced effect in later treatment, and that rapid improvement was related to length of treatment, where those who improved quickly had less sessions. In contrast, Falkenström, Josefsson, Berggren, & Holmqvist (2016) study using a clinical sample only found evidence to support the GEL model, as improvement started to slow in mid-therapy before increasing again towards the end of therapy. However, both models also have limitations in estimating dose effects as therapy has a number of factors which could influence outcome. Barkham, et al., (2006) and Falkenström, Josefsson, Berggren, & Holmqvist (2016) considered limited knowledge of therapeutic adherence to the treatment, and the factors which influence the decision to

end therapy. Both models should be explored in further research focusing on psychotherapy dosage to develop the understanding in this area.

Alongside the theoretical models of dose effect, research has also used statistical methods to analyse varying dosage in clinical research trials. Dunn, et al., (2012) identified 3 possible doses of CBT for psychosis (CBTp) which participants received (no, partial and full) and used a novel statistical approach to compare the effects of the intervention for these groups, whilst accounting for biased estimated effects sizes, alongside secondary mental health measures. Doseage was operaationalised by number of sessions, with a pre-planned minimum of 12 sessions required to be considered to have received a full dose. Partial and no dose groups were viewed as not having received the intervention as intended. Dunn, et al., (2012) found that, as predicted, participants who received a full dose of CBTp had better outcomes than partial and no therapy groups.

For the purposes of the current study, dosage was operationalised by focusing on components of therapy received by participants, including formulation and behavioural work, using therapy adherence checklists. In contrast to the Dunn et al. (2012) paper, both partial and full ‘doses’ of SRT were considered as compliant and adherent therapy. Participants in the partial group received fewer sessions than those in the full group but were nonetheless defined as having completed therapy, rather than having dropped out before the end of the intervention, Rather than focusing on dose-response effects on outcome, the primary aim of the current study was to explore participant level factors that might be related to variations in therapy delievery. Therapy components received in each ‘dose’ group were explored, alongside differing baseline characteristics of participants accessing each ‘dose’. Further understanding of these two areas may highlight the accessibility of SRT in clinical practice. An exploratory analysis exploring differences in

outcome between therapy ‘dose’ groups was conducted, with the acknowledgement that the lack of randomisation variables in this analysis means that no causal attributions can be made (i.e. any differences in outcome between different ‘dose’ groups cannot be attributed to that dose).

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CHAPTER FOUR

Empirical Study

Prepared for Submission to Journal of Clinical Psychology

(Author Guidelines found in Appendix C)

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Exploring variations is the delivery of Social Recovery Therapy for individuals with first episode psychosis: A therapy process evaluation

Victoria Smallman[a]*, Dr Joanne Hodgekins[a], & Dr Sian Coker[a], Social Recovery Therapy Group

[a]Department of Clinical Psychology and Psychological Therapies, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, United Kingdom

*Corresponding author: V.Smallman@uea.ac.uk

Abstract

Background

Social Recovery Therapy (SRT) is a novel therapy focusing on improving social recovery in individuals with First Episode Psychosis. Improvements in social functioning have been found in previous research using SRT with this population. Evaluating novel interventions is key to operationalising them for use in NHS settings.

Aims

This study aims to explore variations in the delivery of SRT using therapy process data from the SUPEREDEN3 trial, and to understand which participants accessed differing 'doses' of therapy (no, partial, full) to inform implementation.

Method

The current study is a secondary analysis, comparing therapeutic components received, and the demographic and outcome measures collected, between different groups, using one-way ANOVAs and Chi-Square tests. An exploratory ANCOVA was conducted to compare outcomes between the different 'dose' groups, controlling for baseline functioning.

Results

There were significant differences between groups for therapeutic components received, with the 'full dose' group receiving the most behavioural and systemic components. There were no significant differences between groups on most demographic and baseline measures, however the 'no dose' group reported significantly lower levels of premorbid scholastic achievement and attention scores.

Conclusions

The ‘no dose’ group had significantly lower levels of educational attainment which could be a barrier to accessing SRT. Participants accessing a lower ‘dose’ of SRT improved in line with other ‘doses’, and it could be argued that a lower intensity version of SRT should be tested. However, no causal attributions can be made about the effectiveness of different therapy ‘doses’ due to the lack of randomisation variables in this secondary analysis. Future implementation of SRT should further explore hypotheses generated and be tailored to meet participants needs.

Key Words: Social Recovery Therapy (SRT), Dose, Accessibility, Psychosis

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Introduction

First Episode Psychosis

Psychosis is categorised as a severe mental illness that can have a significant impact on social functioning which can cause individuals to fall into the category of severe social disability, (NHS, n.d.). Psychosocial disability can occur from mental illness and adversely impact an individual's ability to engage in a society, such as working, (Mental Health Europe, 2020). Hodgekins et al. (2015b) suggest that individuals engaging in less than 15 hours of structured activity per week would represent serious social disability. It is estimated that 3-4% of the population will be affected by psychosis over their lifetime, and up to 80% of individuals are diagnosed with psychosis in adolescence, (Birchwood, et al., 2014). This highlights the importance of targeting support to this group early in their recovery, to target symptom reduction, and support social functioning. This is supported by Birchwood, Todd, & Jackson's (1998) critical period hypothesis, which highlights the importance of early intervention for first episode psychosis (FEP), as disability can develop quickly within this initial period.

To support recovery from FEP, NICE (2014) guidance outlines individuals should be referred into a specialist, multi-disciplinary, mental health service, such as an Early Intervention in Psychosis (EIP) service. EIP services have been implemented in the UK since 2001 and use an assertive outreach approach over a period up to 3 years to support engagement (Birchwood, et al., 2014). The service has a wide range of specialist interventions to support recovery, including talking therapies such as Cognitive

Behavioural Therapy for Psychosis (CBTp), pharmacological interventions, family interventions and employment support. EIP services have been widely researched and Birchwood et al. (2014) suggest EIP services are more effective than care provided in adult community mental health teams, which was the previous provision. Although symptomatic recovery is good from EIP services, there is limited improvement in functional recovery, with over 60% of people with FEP experiencing difficulties with functioning after the first year, (Hodgekins, et al., 2015a).

Social Recovery Therapy

Social Recovery Therapy (SRT) has been developed by Fowler et al (2012) and is based on CBT models of social disability using behavioural, cognitive, and multi-systemic work, following an assessment and formulation, (Fowler, et al., 2019). The aim of SRT is to support social recovery of individuals with psychosis through increasing the time spent in structured activities that are meaningful, such as employment, education, leisure activities and housework, (SRT Team, 2022). In SRT a key component is the importance placed on building a therapeutic relationship, and engaging the individual through an assertive outreach approach, which is both flexible and collaborative, allowing the therapist to ‘walk alongside’ the individual, (Fowler, et al., 2019).

The SUPEREDEN3 trial by Fowler et al. (2018) investigated the effectiveness of SRT in addition to treatment as usual for individuals with FEP, for improvement of functional outcomes, measured by the Time Use Survey (TUS; Hodgekins, et al., 2015b). This Randomised Controlled Trial (RCT) recruited from 4 sites within the UK, and measured outcomes of participants, finding SRT significantly improved time spent in structured activity by an average of 8 hours per week. An area requiring further analysis is

exploring variations in the type and amount of therapy that participants allocated to the intervention received. Compliance in this trial was high, with over 80% receiving the SRT intervention as intended. However, there was variation in the number and content of sessions received (Lowen et al., 2020). To aid implementation of SRT in clinical practice, further exploration of variations in therapy delivery would be beneficial.

Dose Response

In contrast to models in psychotherapy dose response research (Barkham, et al., 1996; Barkham, et al., 2006; Howard, Kopta, Krause, & Orlinsky, 1986), the use of language about dosage within this paper uses terms already defined in the original Fowler et al., (2018) paper and subsequent follow up studies (Lowen et al., 2020). Fowler et al., (2018) found a significant intention to treat effect of SRT and the exploration of dosage groups in this paper is not seeking to examine differential treatment effects. Rather, the aim is to explore the participant characteristics of those accessing different therapy doses to inform implementation.

Implementation of Social Recovery Therapy

RCTs are considered the gold standard of research and are used to test the effectiveness of interventions. Although trials can test effectiveness for specific populations, they do not test how the interventions work, or who the intervention is most suited to. Process evaluation of a novel intervention is a critical step in operationalising a therapy for clinical use, and includes exploring contextual factors and implementation, such as the content and process of therapy delivery, (Moore, et al., 2015). Understanding

the different components in varying doses of a therapy can help identify which parts are the most important in promoting the desired change.

Considering the implementation of SRT into clinical practice, it is essential to develop understanding and operationalize the therapy. Lowen et al. (2020) addressed adherence to SRT, exploring the difference in uptake of therapeutic components in participants receiving different doses. Whilst they acknowledged that the variation in dosage is not due to therapist competence or adherence to the SRT model, further factors were not explored. It would be useful to understand the individual differences of participants who received differing dosages.

For novel interventions to be put into clinical guidelines, the National Institute for Health and Care Excellence (NICE) follow a structured process which includes reviewing and critiquing available evidence and considering the cost impact (NICE, 2022). This guidance is referred to by professionals in the NHS, to ensure their practice is underpinned by a strong evidence-based approach. Currently SRT has been shown to improve functional outcomes, (Fowler et al., 2018), however more evidence is needed on variations in therapy delivery to understand who received different doses and any associations with outcome. Developing the evidence base is a key step towards implementation of SRT in the NHS.

Aims of the project

This retrospective study aims to build on the current SRT literature by further exploring the demographic and therapy data from the SUPEREDEN3 trial (Fowler et al., 2018), focusing on understanding the differing doses of SRT. At present participants are

considered in 3 separate groups: ‘full dose’, ‘partial dose’, and ‘no dose’ of the treatment. To further develop the suitability of SRT within clinical practice, a greater understanding is needed of individual differences in therapy delivery.

Research Questions

Primary Questions:

1. What were the therapeutic components included in different ‘doses’ of SRT?
2. Are there any differences in demographic and baseline variables between individuals who were able to access a ‘full’ dose (vs. ‘partial’ or ‘no’) of Social Recovery Therapy?

Secondary Question:

3. Are there any differences in outcome between individuals who receive different ‘doses’ of Social Recovery Therapy, when controlling for baseline levels of functioning?

Method

Participants

The participants for this study took part in the SUPEREDEN3 RCT (Fowler et al., 2018). For participants to be eligible they needed to be under the care of their local Early Intervention in Psychosis (EIP) team for between 12 and 30 months, were aged 16-35 and were diagnosed with non-affective psychosis. The 4 EIP sites were Norfolk, Sussex, Birmingham, and Lancashire. Participants needed to have low levels of structured activity

after at least 12 months of treatment within their EIP team, which was defined as engaging in 30 hours or less per week of structured activity on the TUS (Hodgekins et al., 2015b). Participants were excluded if they could not speak an adequate level of English to engage in the intervention, were deemed too unwell to engage or if they were part of the original EDEN study (Birchwood, et al., 2014).

There were 155 participants for the SUPEREDEN3 trial, although 1 participant withdrew which left 154 participants within the dataset. 75 participants were randomly assigned to receive SRT alongside their usual treatment from EIP services, and the control group received their usual treatment from EIP. A detailed description of participants and trial methodology can be found in Fowler et al. (2018).

Social Recovery Therapy

Social recovery therapy aims to improve social functioning within a FEP population, measured by the TUS (Hodgekins, et al., 2015b). SRT was delivered by CBT accredited therapists, with experience in EIP services, who had received specialist training in SRT and regular supervision. Adherence to the therapy was recorded on a specific checklist (Lowen et al., 2020), and therapists recorded their sessions which were checked against the Cognitive Therapy Scale – Revised (CTS-R; James, Blackburn, & Reichelt, 2001) to ensure competence.

SRT involves an assertive outreach approach to aid engagement, in a client group that may be more withdrawn and isolated. This is a key component of the therapy, with the therapeutic relationship considered highly important. The therapy uses CBT techniques alongside multi-systemic principles to aid social recovery. Therapists can engage with the

wider system such as families and friends, volunteer and employment organisations to understand barriers and to facilitate social recovery.

For participants to be recognised as having received a ‘full dose’ of SRT, they would need to have engaged with a minimum of six sessions, had an assessment and formulation and a minimum of two in session behavioural experiments. Participants who received a minimum of six sessions, had an assessment, formulation and some behavioural work, but at a lower level of intensity to those in the ‘full dose’ group (e.g. behavioural experiments done as homework rather than in-session with the therapist) were labelled as having received a ‘partial dose’. Participants receiving a partial dose are still considered to have received and completed compliant and adherent SRT, however the intensity of components received differs from ‘full dose’. Participants who had less than six sessions, and/or key components of therapy were not endorsed by the therapists were considered to have had ‘no dose’. It is important to note that ‘no dose’ participants did receive some therapeutic input, with participants engaging in up to 9 sessions, but were not considered to have received the intervention as intended as not enough components of SRT were endorsed.

Of the 75 participants assigned to SRT, 57.3% (n=43) received a ‘full dose’, 24% (n=18) received a ‘partial dose’, and 18.7% (n=14) received ‘no dose’. There was flexibility in how SRT was administered, and therapy was mutually ended by participant and therapist. Dose variation within the intervention arm is considered in regard to accessibility of the intervention rather than participants not being able to engage in the intervention as intended.

Measures

The following measures were collected during the SUPEREDEN3 trial (Fowler et al., 2018), and were used within this study:

Time Use Survey (TUS)

The TUS (Hodgekins, et al., 2015b), measures the hours an individual spends in constructive economic activity (work, childcare, education) and structured activity (constructive economic activity and leisure activities) per week and has been adapted for individuals with psychosis. The TUS was administered at all three timepoints (baseline, 9 months, and 15 months).

Demographic variables

These were collected at baseline to ascertain the characteristics of the sample regardless of their randomisation. These variables include age, gender, ethnicity, level of education and living situation.

Baseline Variables The Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, & Opler, 1987) is a scale to assess psychotic symptoms, and provides scores separetely for positive and negative symptoms, and a total score. A higher scores indicates a higher presence of symptoms.

The Beck Depression Inventory (Beck, Steer, & Brown, 1996) is a self-report questionnaire of 21 questions, to measure depressive symptoms. A higher total score indicates more severe symptoms of depression.

The Social Interaction Anxiety Scale (SIAS) (Mattick & Clarke, 1998) is a self-report questionnaire containing 20 questions to measure anxiety in social interactions. A higher total score indicates a high level of anxiety.

The Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1989) is a rating scale to measure negative symtpoms of schizophrenia and scores seperately for five subscales; affective flattening, alogia, avolition-apathy, anhedonia-asociality and attention. A higher score indicates a higher severity of symptoms.

The Premorbid Adjustment Scale (PAS) (Cannon-Spoor, Potkin, & Wyatt, 1982) measures four areas of functioning across different time periods, ranging from childhood to adult life. Each area of functioning is rated for each time period, with a higher score indicating a higher level of impairment. The PAS is completed collaboratively with the interviewer.

The Vocabulary Subtest of Verbal Comprehension on the Wechsler Adult Intelligence Scale (WAIS-IV) (Wechsler, 2008) is a list of words, and interviewers ask individuals to define each word. Each participant received a raw score after completing the subtest, which was then scaled.

Therapy Process Variables

Therapists delivering SRT within the Fowler et al. (2018) study were requried to keep records of techniques used in each session. This was collected using the therapy adherence scale after each session, appendix d, composing of 14 components, including engagement, cognitive (e.g. fostering positive sense of self), behavioural (e.g. overcoming avoidance) and systemic work (e.g. involving other organisations). This data was rated by other therapists for reliability and forms the characteristics of placing participants into ‘full’, ‘partial’, or ‘no dose’ groups.

Procedure

This study uses data from the SUPEREDEN3 trial, and the full procedure can be found in the trial paper, (Fowler et al. 2018). Data within the trial was collected at baseline, at 9 months and again at 15 months which represented a 6 month follow up. This study is a secondary analysis of the data collected, focusing on baseline and 9 months data.

The first phase of analysis explores the differing components of SRT, and the therapeutic content for participants in each dosage group. Therapy adherence data collected through a therapist reported scale was collated to create total scores for each component present per participant. Mean scores were created for each dosage group for each component. Chi-square analyses were run to explore the differences in the presence of therapeutic components between doses of SRT, using Games-Howell for post hoc tests to account for heterogeneity of variances.

The second phase of analysis explores accessibility of SRT, by analysing demographic variables of the participants in dosage groups and the baseline levels of key outcome measures. This includes the TUS, therapy process variables, the PAS and the PANSS. Chi-square analyses were run to compare categorical variables, and one-way ANOVAs were run to compare continuous variables. To account for multiple comparisons within this phase of analysis a Holm-Bonferroni correction was applied.

The third phase of analysis compares TUS scores at 9 months between the different dosage groups, controlling for baseline TUS scores using an ANCOVA. .

Ethical Considerations

The SUPEREDEN3 study was granted ethical approval from the National Research Ethics Service Committee in the West Midlands (reference 12/WM/0097). The ethical approval covers all the data collected within trial and therefore covers this study. The current study also underwent internal review from the University of East Anglia (UEA).

Results

Missing data

There was some missing data across dosage groups to be considered, which was present across some of the baseline variables, see appendix a. Missing data was not included in analysis for that variable. There was over 10% of missing data for baseline vocabulary, and analysis of this variable should be treated with some caution.

Phase One

Table 1. *A table showing the mean number (and standard deviations) of sessions for participants in each dosage group and mean number of therapeutic components per participant*

	No Dose (n=14)	**Partial Dose (n=18)**	**Full Dose (n=43)**
Number of Sessions (sd, range)	3.64 (2.47, 0-9)	15.5 (5.4, 7-26)	21.28 (5.7, 8-37)
Engagement	3 (1.96)*	10.61 (7.16)*	13.05 (9.53)*
Assessment	2.93 (1.86)*	7.72 (3.89)*	10 (6.8)*
Timeline	0.79 (0.98)	1.78 (1.4)	1.74 (1.7)
Problem List	0.93 (1)	2.61 (2.2)	3.23 (3.52)
Goals and Values Based Assessment	1.43 (1.5)*	4.17 (3.13)*	5.74 (3.68)*
Formulation	1.29 (1.82)*	6.67 (3.5)*	10.49 (7.78)*
Psychoeducation	0.21 (0.43)*	2.39 (2.6)*	3.6 (4.17)*
Cognitive	0.57 (1.09)*	5.94 (5.23)*	7.35 (6.5)*
Illness	0 (0)	0.33 (0.59)	0.81 (2.2)
Stigma	0.07 (0.27)	0.06 (0.24)	0.65 (1.79)
Negative beliefs about self	0.07 (0.27)	2.56 (4.02)	2.88 (3.93)
Fostering positive sense of self	0.14 (0.36)*	3.39 (3.39)*	4.05 (4.99)*
Beliefs about waiting until better	0.29 (0.83)	1.06 (2.16)	1.77 (3.23)
Discussions and Strategies – symptoms of psychosis	0.43 (0.85)	2.33 (2.66)	3.4 (4.76)
Discussions and Strategies – negative symptoms	0 (0)	0.67 (1.37)	1.26 (2.58)
Behavioural Work	0.86 (1.35)*	5.72 (4.4)*	11.84 (6.5)*
Experiment	0.07 (0.27)*	2.17 (2.04)*	4.19 (3.33)*
Activation	0.43 (1.09)*	3 (3.31)*	7.56 (6.12)*
Overcoming Avoidance	0.43 (0.94)*	2.39 (3.03)*	4.84 (5)*
Involving other Organisations (systemic work)	0.43 (0.76)*	1.83 (2.88)*	4.56 (3.29)*

*Significant difference found following Holm-Bonferroni correction

One-way ANOVAs were used throughout, using Games-Howell for post hoc tests. A Holm-Bonferroni correction was applied to the alpha level to account for multiple comparisons. Significant differences were found between dosage groups, following the Holm-Bonferroni, for Engagement ($F(2,72)=8.099$, $p<0.001$), Assessment ($F(2, 72)=8.542$, $p<0.001$), Goals and Values Based Assessment ($F(2, 72)=9.465$, $p<0.001$), and Psychoeducation ($F(2, 72)=5.246$, $p=0.007$). On post hoc tests, significant differences were found between ‘no’ and ‘partial dose’ groups and ‘no’ and ‘full dose’ groups, but there were no significant difference between ‘partial’ and ‘full dose’ groups. There were

significant differences between all dosage groups for formulation, $F(2, 72)=11.973$, $p<0.001$, with the ‘full dose’ group receiving the highest number of sessions using a formulation ($m=10.49$). As higher doses have higher number of sessions, some difference is expected, although the significance of the differences was previously unknown.

Exploring cognitive work, there were significant differences found for cognitive work as a whole ($F(2, 72)=7.769$, $p<0.001$), negative belief about self ($F(2, 72)=3.325$, $p=0.042$), fostering a positive sense of self ($F(2, 72)=4.332$, $p=0.017$), and discussion and strategies for psychosis ($F(2, 72)=3.15$, $p=0.049$). Using post hoc tests, differences were between the ‘no’ and ‘partial dose’ groups, and the ‘no’ and ‘full dose’ groups. However, both negative beliefs about the self and discussion and strategies for psychosis were non-significant following the Holm-Bonferroni correction. There were significant differences for all behavioural work, $p<0.05$ across all 3 groups. When comparing the ‘full’ and ‘partial dose’ groups, the ‘full dose’ group received approximately double the behavioural work, despite only receiving 40% more sessions. For systemic work there were significant differences found between groups, ($F(2, 72)=13.152$, $p<0.001$). The significant differences were found between the ‘partial’ and ‘full dose’ group, and the ‘no’ and ‘full dose’ group. The ‘full dose’ group had 4.56 (21.4%) of sessions on average containing systemic work compared to 1.83 (11.8%) in the ‘partial dose’ group.

Phase Two

Table 2. *A table showing demographics of SRT group, shown by dosage received by participants and the treatment as usual group as a comparison.*

		TAU (n=79)	No Dose (n=14)	Partial Dose (n=18)	Full Dose (n=43)
Mean age in years (sd)		24.77 (4.36)	23.21 (5.44)	25.89 (6.08)	25.02 (5.21)
Gender	Male	60 (76%)	10 (71.4%)	15 (83.3%)	31 (72.1%)
	Female	19 (24.1%)	4 (28.6%)	3 (16.7%)	12 (27.9%)
Ethnicity	White – British	58 (73.4%)	9 (64.3%)	14 (77.8%)	32 (74.4%)
	White – Irish	2 (2.5%)	1 (7.1%)		
	Any other White Background	1 (1.3%)			2 (4.7%)
	Mixed – White and Black Caribbean	2 (2.5%)			
	Mixed – White and Black African				1 (2.3%)
	Mixed – White and Asian			1 (5.6%)	1 (2.3%)
	Any Other Mixed Background				1 (2.3%)
	Asian or Asian British – Indian	1 (1.3%)			
	Asian or Asian British – Pakistani	6 (7.6%)	2 (14.3%)	1 (5.6%)	4 (9.3%)
	Asian or Asian British – Bangladeshi	1 (1.3%)			1 (2.3%)
	Any Other Asian Background	1 (1.3%)	1 (7.1%)		
	Black or Black British – Caribbean	4 (5.1%)			
	Black or Black British – African	2 (2.5%)			1 (2.3%)
	Any Other Black Background			1 (5.6%)	
	Any Other Ethnic Groups	1 (1.3%)	1 (7.1%)	1 (5.6%)	
Marital Status	Single or Unmarried	69 (87.3%)	12 (85.7%)	17 (94.4%)	38 (88.4%)
	Married	3 (3.8%)	2 (14.3%)	1 (5.6%)	2 (4.7%)
	Cohabitating (not married)	5 (6.3%)			3 (7%)
	Divorced	2 (2.5%)			
Level of Education*	Primary Education or Less	6 (7.6%)	3 (21.4%)	2 (11.1%)	3 (7%)
	Secondary Education	28 (35.4%)	4 (28.6%)	5 (27.8%)	17 (39.5%)
	Tertiary or Further Education	39 (49.4%)	4 (28.6%)	9 (50%)	23 (53.5%)
	Other General Education	3 (3.8%)	3 (21.4%)	1 (5.6%)	
	Not Known			1 (5.6%)	
Baseline Living Situation	Living Alone	15 (19%)	2 (14.3%)	4 (22.2%)	9 (20.9%)
	Living with Spouse	4 (5.1%)	1 (7.1%)		2 (4.7%)
	Living together as a Couple	4 (5.1%)		1 (5.6%)	3 (7%)
	Living with Parents	41 (51.9%)	9 (64.3%)	8 (44.4%)	20 (46.5%)
	Living with Other Relatives	8 (10.1%)	1 (7.1%)		1 (2.3%)
	Living with Others	7 (8.8%)	1 (7.1%)	5 (27.8%)	8 (18.6%)
Site	Birmingham	20 (25.3%)	6 (42.9%)	5 (27.8%)	8 (18.6%)
	Lancashire	28 (35.4%)	6 (42.9%)	6 (33.3%)	13 (30.2%)
	Norfolk	23 (29.1%)	2 (14.3%)	6 (33.3%)	16 (37.2%)
	Sussex	8 (10.1%)		1 (5.6%)	6 (14%)

*Significant difference found at <0.05

Participant demographics

Participant demographics were explored, and are represented in Table 2, separately for each group and Treatment as Usual. Due to large number of groups within the ethnicity variable, groups were collapsed into white backgrounds and non-white backgrounds. A Holm-Bonferroni correction was applied to the alpha to account for multiple comparisons. Only level of education and dosage group were significantly associated, which remained following the correction, $X(8) = 16.41$, $p=0.037$, with a medium effect size (Phi=0.037). This highlights that participants who accessed 'no dose' had lower levels of higher education than participants accessing a 'full dose'. Fishers Exact Test was undertaken to confirm the significant association, $p=0.033$, due to low numbers in each group. There were no significant differences found between doses on distribution of participants between sites.

Baseline variables

Variables at baseline, including mental health, premorbid adjustment, and continuous demographic variables were tested using one-way ANOVAs to explore potential significant differences between dose groups. Due to the violation of normality assumption, non-parametric testing was also undertaken which confirmed parametric findings. A Holm-Bonferroni correction was undertaken to account for multiple comparisons.

There were no significant differences on the PANSS, BDI and SIAS at baseline. The 'no dose' group had poorer premorbid adjustment in scholastic performance in early adolescence compared to the 'partial' and 'full dose' groups, $F(2, 71) = 5.003$, $p=0.009$. There were no other significant differences on premorbid adjustment between groups. On the SANS attention subscale there was a significant difference between groups $F(2, 71) =$

5.089, p=0.009, although on post hoc tests of Games-Howell this difference was inconclusive. The 'no dose' group had the poorest attention scores (m=1.93). There were no other significant differences on the SANS subscales between dosage groups. The mean scores, and standard deviations (SD) of these variables are shown in Table 3.

Vocabulary reached statistical significance, $F(2, 56) = 4.057$, $p=0.023$, with the 'no dose' group having significantly lower levels of vocabulary in comparison to the 'partial' and 'full dose' groups. There was a significant difference at baseline TUS, with the 'partial dose' group recording significantly higher hours of Constructive Economic Activity (m=10.97) than the 'no' and 'full dose' groups, $F(2,72)=2.756$, $p<0.02$. However, following the Holm-Bonferroni correction adjusting the alpha level, these two variables became non-significant.

Table 3. *Table shows mean scores (and SDs) of baseline variables with between dosage groups, compared to Treatment as Usual (TAU) group.*

	TAU	**No Dose**	**Partial Dose**	**Full Dose**
Vocabulary Subtest of Verbal Comprehension WAIS-IV (Baseline)	7.43 (2.9)	5.73 (2.69)	9.9 (3.57)	8.08 (3.51)
SANS Attention Subscale (Baseline)	1.21 (1.07)	1.93 (1.64)*	0.71 (0.99)*	0.84 (1.11)*
Premorbid Adjustment – Scholastic Performance Subscale (Early Adolescence)	3.59 (1.57)	4.07 (1.90)*	2.28 (1.53)*	2.60 (1.71)*
Positive and Negative Syndrome Scale (PANSS) Total Score	64.98 (16.03)	65.86 (20.37)	59.94 (14.86)	61.21 (14.42)
Beck Depression Inventory (BDI)	19.16 (12.18)	13.79 (11.3)	19.59 (10.86)	19.45 (11.92)
Social Interaction Anxiety Scale (SIAS)	39.43 (15.7)	39.64 (13.74)	40.53 (12.47)	39.68 (16.93)
TUS Structured Activity	12.03 (8.65)	10.77 (7.15)	14.47 (7.75)	9.63 (7.26)
TUS Constructive Economic Activity	7.95 (7.49)	5.73 (5.92)	10.97 (6.37)	6.70 (5.67)

*Significant difference found at <0.05 following Bonferroni-Holm correction

Phase Three

Table 4. B*aseline and 9 months scores on the Time Use Survey (structured activity) for dosage groups, compared to TAU.*

		TAU	**No Dose**	**Partial Dose**	**Full Dose**
Baseline Structured Activity	N	79	14	18	43
	Mean	12.03	10.77	14.47	9.63
	SD	8.65	7.15	7.75	7.26
	95% Confidence Interval	10.09-13.97	6.64-14.9	10.62-18.32	7.39-11.86
Post Intervention Structured Activity	N	70	13	18	42
	Mean	18.33	24.87	28.11	26.46
	SD	22.5	36.12	18.87	22.23
	95% Confidence Interval	12.96-23.69	3.01-46.72	18.73-37.49	19.54-33.39

A one-way ANCOVA was conducted to determine a statistically significant difference between the ‘no’, ‘partial’, and ‘full’ dose groups on post intervention structured activity scores on the Time Use Survey (TUS) controlling for baseline structured activity scores on the TUS. The ANCOVA data does violate the normality of variances assumption, although ANCOVAs are considered robust to this violation, interpretation should be cautious.

There was no statistically significant difference in post intervention TUS structured activity scores between dosage groups when controlling for pre intervention TUS structured activity scores, $F(2,69)=0.36$, $p=0.964$. Both ‘no dose’ and ‘partial dose’ groups had large Standard Errors (SE), and large confidence intervals, indicating higher variance and less reliability in these 2 groups in comparison to ‘full dose’. Both ‘no’ and ‘partial’ dose groups had a smaller sample size than ‘full dose’. The null hypothesis can be accepted that all dosage group post-intervention mean TUS scores are equal when controlling for baseline TUS scores.

Discussion

How does SRT delivery differ between dosage groups?

Therapy in the ‘no’ dose group appears to be significantly different from therapy in the ‘partial’ and ‘full’ groups, with statistically significant differences found on almost all components of SRT. However all doses reported improvement in structured activity levels per week, suggesting the early components of SRT may play an important role in supporting recovery, such as an assertive outreach approach for relationship building. The literature highlights the importance of the therapeutic relationship as a key component to therapy outcomes (Bourke, Barker, & Fornells-Ambrojo, 2021; Browne, et al., 2021). Despite the improvement, the ‘no dose’ group should be considered as not receiving SRT as intended as they did not receive key components of the therapy.

The ‘full’ and ‘partial dose’ groups appear closely aligned with both receiving all the therapeutic components of the SRT model, although the proportions of these components vary. There were no significant differences in cognitive work, however there were significant differences in behavioural and systemic work. On average the ‘partial dose’ group had 5.72 (36.9%) sessions focusing on behavioural work in comparison to 11.84 (55.6%) in the ‘full dose’ group. In contrast there were no significant differences between these groups for overcoming avoidance within behavioural work, underlining a need for this at all levels in supporting functional recovery. The ‘partial dose’ group received an active SRT intervention containing all the key components, but at a lower level of intensity, therefore this dose could be considered as being potentially ‘good enough’ for the participants who accessed it.

Participant level differences between dose groups

At baseline the ‘partial dose’ group appears different from the ‘no’ and ‘full’ dose groups, with higher levels of constructive economic activity, approximately 4-5 hours more per week on average. This group also reported a greater number of hours of structured activity, although both were not statistically significant from the other groups. ‘Partial dose’ participants couldbe considered less socially disabled at baseline and therefore may require less support with the SRT intervention. These higher baseline levels of activitycould account for the lower number of sessions engaged in and the lower proportion of behavioural and systemic components, as these participants may be more able to initiate these components prior to the intervention. A lower intensity version of the SRT intervention may be more suitable for this group. However, as both of the TUS variables are non-significant a level of caution needs to be taken in the interpretation of this finding. The hypothesis that a ‘partial dose’ is sufficient for participants with higher baseline TUS should be explored in further research.

Demographic and baseline variables were explored between the dosage groups to understand if there were unique differences about the participants who received different doses. There were no significant differences at all time points between doseage groups for measures of mental health symptomology, with symptoms not appearring to impact the engagement of participants in SRT. For demographic variables, the only significant difference found between dosage groups was that of level of education, with participants in the ‘full dose’ group (53.5%) and ‘partial dose’ group (50%) having higher levels of tertiary education in comparison to the ‘no dose’ group (28.6%). The findings in differences of educational attainment between dosage groups were potentially reflected in

baseline scores in both the SANS Attention Subtest and on the PAS for scholastic performance in early adolescence, on which scores were lowerin the ‘no dose’ group.

These findings could suggest that participants who received ‘no dose’ of SRT found it more difficult to engage in the intervention, and may have needed adaptations to the intervention to support their engagement. Researchers have found individuals can stop therapy if there is excessive reading or writing, or if the therapy interferes with other commitments (Barnes, et al., 2013). Research has also suggested that patients who struggle to communicate their experiences, or understand the therapeutic components can also be barriers to engagement (Wolitzky-Taylor, et al., 2018). It may also be beneficial to explore the role of confidence, and expectations of ability based on previous experiences for this group. The therapy could be adapted, using simplified language, and utlising other communication aids such as pictures and videos, to aid understanding of any complex constructs.

Are there any differences in outcome between individuals who receive different ‘doses’ of Social Recovery Therapy?

When comparingrecovery outcomes between groups, it’s important to highlight that we cannot say that any difference is because of the difference in dose, as comparisons were between doses and do not include participants in the control arm. Exploring subgroups removed the randomisation element of the study and thus no causal attributions about dose on outcome can be made. Whilst the Fowler, et al., (2018) found a signifcant improvement in participants assigned to SRT, which includes all dosage groups, an ANCOVA was undertaken to explore differences between these groups. The ANCOVA accounted for baseline TUS scores, and found no significant differences between the dosage groups.

This suggests that improvements in social recovery following intervention were similar across dosage groups despite the variation in intensity of SRT received. Whilst the 'no dose' group were considered not to have received SRT as intended, the average sessions for this group was 3.64. Therefore 'no dose' participants can be considered to have received some therapeutic intervention, and the early stages of SRT. From an implementation perspective, some participants improved without receiving specific SRT components such as behavioural experiments in session with the therapist. It is possible that different groups benefitted from different intensities of SRT, and future research could test this varying intensity to understand this further.

Sub-group Analysis

The analyses conducted in this paper have removed the randomisation element of the original design, instead separating the intervention arm into subgroups of participants who received different therapy 'doses'. There is a wide array of limitations that are well documented within the literature of analysing sub-groups of participants and drawing comparisons. Research has argued that small samples, often found in subgroup analyses, are likely to be underpowered and prone to both false positive and false negative findings (Burke, Sussman, Kent, & Hayward, 2015; Kent, Rothwell, Ioannidis, Altman, & Hayward, 2010). It has also been argued that subgroup analysis can search for statistical significance when not present in primary findings, and then ignore negative findings, only reporting on significant findings in the results, (Desai, Pieper, & Mahaffey, 2014; Hirji & Fagerland, 2009). It is important that any bias from sub-group analysis is clearly reported in research, so that biased estimates of treatment effects don't negatively impact future research and clinical practice.

Randomised Controlled Trials (RCT) use randomisation to minimise bias, including balancing possible confounding variables between intervention and control groups to make valid comparisons, (Speith, et al., 2016). Desai, Pieper, & Mahaffey (2014) acknowledges the impact of subgroup analyses post-randomisation, and that there is a high likelihood of biased reporting of outcomes, as those complying with treatment are likely to differ to non-compliers. Comparisons between subgroups cannot discriminate between the effect of the therapy dose and other potential confounding variables that would have been 'controlled' for using randomisation. However, within this study the aim is not to compare dose groups with corresponding Treatment As Usual (TAU) dose groups, the primary focus was on understanding group membership and participant level differences between those accessing differing intensities of SRT. All research exploring post-randomisation variables needs to report risk of bias to ensure transparency and reduce misinterpretation of findings.

Whilst there are limitations to sub-group analysis, researchers have also acknowledged benefits of this, and possible solutions. It has been emphasised that all findings should be reported, regardless of the outcome, (Desai, Pieper, & Mahaffey, 2014; Kent, Rothwell, Ioannidis, Altman, & Hayward, 2010). Researchers have also highlighted the value of exploratory analyses, although caveat that they should be used to generate new hypotheses rather than confirm existing ones (Burke, Sussman, Kent, & Hayward, 2015; Kent, Rothwell, Ioannidis, Altman, & Hayward, 2010). The current study is a secondary analysis and looks to explore the SRT subgroups identified from the Fowler, et al., (2018) trial. The study has applied corrections to limit false postive rate, reported all outcomes from analysis and has generated hypotheses that will need to be confirmed in subsequent studies. These include participants with higher baseline TUS scores where a 'partial dose'

may be sufficient and participants with lower educational attainment who may need adaptations to access a higher intensity of SRT.

Strengths and Limitations

This study reports the analysis of three dose groups throughout, which are small in number and unequal in size. The ‘full dose’ group is twice the size of the other doses and although adjustments have been made in statistical analysis, it is possible the comparisons between groups are biased. The ‘no’ and ‘partial dose’ groups may also be more susceptible to outliers which would skew means and comparisons to the ‘full dose’ group. This should be taken into consideration when looking at results and conclusions should be viewed with a degree of caution.

The TUS (Hodgekins, et al., 2015b) was the primary outcome of the Fowler et al., (2018) trial as a measure of social recovery for a population with psychosis. The TUS measures hours in structured activities, in both leisure and work domains, and has been adapted for psychosis populations (Hodgekins, et al., 2015b) therefore can be considered a valid measure for the sample. However, the TUS goes beyond other measures looking at social recovery, that have recorded recovery dichotomously on few variables, such as the presence or absence of work or relationship. Previous recording of social recovery can be considered reductionist and lack validity, and the TUS attempts to holistically record social recovery on a continuous scale, which is easily comparable.

However social recovery is a complex construct, and any measure could be considered reductionist in trying to define and record it. The TUS is a self-report measure and therefore introduces subject bias, and participants may over or under report their

activity levels. It is also possible that subjects who have high levels of work activities, overpower the total score, and others may misinterpret this individual to have high levels of leisure activities too, if looking at total score in isolation. The TUS subscales should be clearly described to limit any misinterpretation.

This study explores SRT therapy data to understand the implementation of this intervention, which could be of benefit to the NHS. The study indicates there may be sub-groups within this population which find it easier to access SRT, in addition to those who may experience barriers. Mostly these accessability differences were present at baseline and screening measures in future research could be used to explore this issue. Despite the differences in group membership, all groups benefitted in some way from SRT, highlighting its benefit. Having a more comprehensive understanding of the benefit and the participants who can access it is critical in operationalising SRT for use in clinical settings.

There was some missing data within the analysis, and in the trial, data were not missing at random. It is likely that those who didn't complete follow-up were perhaps doing less well, which means the data may be skewed towards those who are doing better. In the results of this study primarily focus was on baseline variables, with low levels of missing data, and only logical memory, vocabulary, and block design with higher levels of missing data to interpret cautiously, particularly in the 'partial dose' group.

Future Directions

The results suggest there may be some barriers in accessing SRT, including lower educational attainment. Additionally, some individuals may not require the 'full dose', particularly if they are experiencing less severe social disability at baseline. It might be

helpful to consider tailoring different doses of SRT to different groups to widen the accessibility of the treatment. Adaptations could be made for individuals with a lower educational attainment, an enhanced SRT, although this would need to be explored. Frawley et al. (2022) are currently undertaking a study combining SRT with cognitive remediation training to target cogntive and functional outcomes, and these approaches may be as beneficial as enhanced SRT models in supporting the accessibility of the therapy.

In contrast, participants with higher activity levels at baseline, could be offered a lower dose of SRT, with fewer sessions needed to support behavioural or systemic work. In ensuring the approach is cost-effective, it may be most effective to offer a lower number of sessions to all participants, and screen for enhanced sessions, or add extra behavioural and systemic sessions, if required. However, further research is necessary, and this could utilise session by session assessments, as suggested in dose response research, to accurately track changes in outcome across the intervention, (Barkham, et al., 1996; Barkham, et al., 2006).

In this study we can understand who accesses different doses but we cannot comment on the impact of dose on the effectiveness of SRT as we are unable to make comparisons to the control group.Further research could use a Complier-Average Causal Effect, a novel statistical approach with stratification of therapy dose based on Dunn, et al., 2012 to analyse varying doses of SRT (Angrist, Imbens, & Rubin, 1996). CACE analysis explores the impact of compliance on the effectiveness of the intervention by making adjustments for non-compliance in intervention studies, assuming equal non-compliance in both intervention and control arms of the study, in estimating the effects of treatment. This is through understanding in the control group, the proportion of participants who would have received a ‘no’, ‘partial’ or ‘full dose’ if they had been allocated to the intervention.

For example, is there a stronger effect of the intervention in those who received a ‘full dose’ compared to those in the control group who would have received a ‘full dose’ if they had been allocated to SRT. This would add a level of robustness to thefindings in this study, whilst retaining the randomisation element of the RCT design in original study by Fowler, et al., (2018). .

Some research trials have looked at the effects of specific components of therapy and the impact this can have on treatment effects. Flach, et al., (2015) highlight that the number of sessions delivered is not the only important factor when delivering therapy, and the quality of the therapy delivered should also be addressed. Quality can be understood from both the components of therapy delivered as well as the quality of the therapist delviering the therapy. (Flach, et al., 2015) analysed baeline characteristics and the components of CBT delivered in the EDIE-2 RCT (Morrison, et al., 2012) finding specific components of CBT enhanced the treatment effects. This approach could also be used in future research for SRT, understanding the key components of the therapy, which should be present in any variation of the therapy deleivered.

To continue building the evidence base for SRT, it would be helpful to test the adaptations for accessibility of SRT, to further understand the optimal treatmentlength, and the types of participants more likely to require a different dose. Participants could be screened for levels of structured activity, and educational attainment levels to indicate the most effective dose. It would also be beneficial to monitor the costs of each dose as well as any reduced costs from an improvement in functional recovery of participants. In addition, a future trial could compare the efficacy of a low vs high intensity SRT to formally test the effectiveness of a briefer version.

Conclusion

SRT appears to be a beneficial therapy to support people with first episode psychosis in improving their structured activity levels, as measured by the TUS. Therapy process data from the original trial highlights variations in therapy delivery which may reflect individual differences in how therapy is accessed. This study suggests that premorbid educational attainment and baseline levels of activity may be important factors to take into account when tailoring therapy length and content. Future research should build on this process evaluation to explore adaptations to widen accessibility and operationalise the therapy for use in the NHS.

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Appendix A. Missing data from ‘doseage’ groups in analysis.

Phase 1:

All 75 participants included in the analysis but 9.3% of participants in ‘full dose’ group had missing data for one session and 2.3% (one participant) in the ‘full dose’ group had missing data for 4 sessions. 5.6% (one participant) in the ‘partial dose’ group has missing data for 3 sessions.

Phase 2:

There was no missing data on baseline TUS scores across all dosage groups. On the PAS, 2.3-4.7% participants in the ‘full dose’ group had missing data, across 7 of 10 areas of functioning and time period. On the SANS, 1 participant (5.65%) in the ‘partial dose’ group had missing data for every subscale, and 1 additional participant in the ‘full dose’ group had missing data on the alogia subscale. Across the Vocabulary, Logical Memory and Block Design tasks at baseline there were high levels of missing data across dosage groups, 14.3-21.4% in ‘no dose’ group, 38.9-44.4% in the ‘partial dose’ group and 11.6-14% in the ‘full dose’ group. The ‘full dose’ group had 11.6% of missing data on the SIAS.

Phase 3:

There was one participant missing data in the ‘nose dose’ group and one in the ‘full dose’ group, and these participants were not included within this part of the analysis.

CHAPTER FIVE

Critical Evaluation

Word Count (excluding references): 4344

Summary of Results

The systematic review highlights a high prevalence of depression research within perinatal mental health in comparison to other diagnosis such as postpartum psychosis, postpartum anxiety, and perinatal PTSD. There were 10 studies that focused on mothers with depression collecting longitudinal outcomes which ranged from short term, within three months postpartum, to long term studies following up over seven years. Whilst this increase in published research may be due to a higher prevalence of this diagnosis in the general population, more needs to be known about other disorders in this period to ensure specialist perinatal mental health services are effective.

In both medium and long term follow ups within depression studies, the degree of variability within recovery was reduced in comparison to short term follow up, with studies reporting a minimum of 33% of their samples reaching recovery. Mother's remission rates appear to improve over the course of follow-up, and studies have explored outcomes of mothers who do not improve. Torres et al (2019) found significant predictors of recovery over a long term follow up, including no prior depression and postpartum onset of depressive episode, however no other studies explored potential predictors of recovery. This is an important component of understanding mothers experience and putting into place effective interventions and care provision in perinatal mental health services.

Longitudinal studies focusing on postpartum psychosis primarily had long term follow up periods of over 1 year, and remission rates varied from 33% to 66%. Studies did show rates of psychosis decrease over time, although studies included in the review were published from 1974-2021 and clinical care has evolved significantly during this time. Rommel et al. (2021) had the highest recovery rates recorded within a first episode postpartum psychosis sample, and this is the most up to date of all of the studies included.

It is possible that rates of recovery may be higher for mothers currently diagnosed with postpartum psychosis, with the increase in specialist perinatal care, and evidence-based interventions. This includes the availability of Mother and Baby Units, providing multidisciplinary care, and NICE (2020) recommending psychological therapies such as Cognitive Behavioural Therapy (CBT). There are also interventions involving mother and baby such as Video Interaction Guidance which supports building relationships between the dyad. As such an increase in up-to-date research in this area will help to clarify the validity of recovery rates from earlier studies.

The empirical paper within this thesis portfolio focused on functional recovery following first episode psychosis.. The empirical paper further explores the data obtained from Fowler et al (2018), understanding the components of Social Recovery Therapy (SRT) received by participants between group differences in those accessing different therapy ‘doses’.

The group of participants who were considered to have received ‘no dose’ of SRT were found to have lower attention scores, , and poorer scholastic achievement in adolescence in comparison to participants who accessed a partial or full dose of the treatment. This indicates that this group may need adjustments to be able to access SRT, although more research is needed to understand the most suitable adaptations. The participants in the ‘partial’ therapy group had higher levels of structured activity at baseline in comparison to other participants receiving SRT, although this was found to be non-significant following corrections to the alpha level for multiple comparisons. It was suggested that this group may haverequired fewer sessions than the ‘full dose’ group, as they were less socially disabled at baseline and may not have needed the additional behavioral sessions to support their social recovery. The evidence from within this study

emphasised that participants receiving a ‘partial dose’ of SRT should not be considered as non-compliant with treatment as they closely mapped onto the ‘full dose’ group, recieving an active but less intense dose of SRT, and potentially needed fewer sessions. There were no differences in structured activity post-treatment between therapy dose groups.

Long Term Social Recovery in Perinatal Mental Health and Psychosis

Few studies in the systematic review addressed non-symptomatic recovery following perinatal mental health difficulties over time. Only Burgerhout et al (2017) addressed functional recovery following postpartum psychosis in depth as a primary outcome, using the LIFE-RIFT measure (Leon et al., 1999), finding 74.4% of participants exhibited good overall functioning at 9-month follow-up. Burgerhout et al (2017) also found women who had impaired functioning had significantly longer episodes of psychosis compared to women reporting good functioning. This study suggests the importance of considering both social and symptomatic recovery, and more research is needed to explore the relationship between the two components.

None of the studies included in the review that focused on mothers with depression looked at functioning as a primary outcome, however four studies had secondary self-report measures including the Brief Disability Questionnaire (VonKorff, Ustun, Ormel, & Kaplan, 1996), the Work and Social Adjustment Scale (Mundt, Marks, Shear, & Greist, 2002) and the Work Leisure and Family Life Questionnaire – Modified (Boath, Pryce, & Cox, 1995). Five studies did record further pregnancies from mothers within these samples, although there is limited narrative within these studies on the impact of their mental health episode and if this influenced their family planning decisions.

In contrast much more is known about social recovery in non-perinatal psychosis, and the impact this can have in the long term. Henry et al. (2010) explored recovery rates in a longitudinal study of individuals with First Episode Psychosis (FEP) finding 37-59% of the sample achieved symptomatic recovery dependant on the outcome measure used and 30.5% achieved social recovery. The symptomatic recovery rates are similar to the long-term recovery rates reported for postpartum psychosis samples in the systematic review. The social recovery rates were only measured in one postpartum psychosis study at 9 months (Burgerhout et al., 2017) and had a higher rate of good functioning at 74.4%. However as follow-up time frames and measures varied social recovery rates may not be as comparable, compared to symptomatic recovery rates. In addition, the Burgerhout et al., (2017) study suggests there is scope for further improving social recovery following an episode of postpartum psychosis.

Fowler et al (2018) explored the effectiveness of Social Recovery Therapy alongside the EIP approach and found a significant increase in structured activity in participants allocated to SRT. This therapy continues to be researched to build the evidence base, exploring the effectiveness in socially withdrawn young people with severe mental illness (non psychotic) in the PRODIGY trial (Fowler, et al., 2021) and exploring the role of social cognition (Griffiths, et al., 2021). This will increase the understanding of those who could benefit from the therapy.

Research outlined above shows that both perinatal and non-perinatal populations can struggle with functional recovery after psychosis. It is possible that SRT could be of benefit to mothers with postpartum psychosis, although their psychosis presentation can differ from FEP. An assertive outreach approach, together with a focus on increasing structured activities, such as child care, may help support their recovery. More research

would be needed with mothers with postpartum psychosis to explore the effectiveness of the intervention.

Current clinical services in the UK such as EIP, have several groups to encourage social functioning including the promotion of exercise and socialising with other individuals also within the service. In the EIP waiting time standard guidance, it is outlined that peer support workers and support for education and employment should be available, (NHS England, NICE, & National Collaborating Centre for Mental Health, 2016). This holistic approach across a 3-year period allows individuals to move towards social recovery goals once the psychotic episode has stabilised. This is different to perinatal mental health services which currently withdraw their involvement at 1 year, although this is due to increase to a 2-year provision in line with NHS guidance.

As a whole, research in perinatal mental health using clinical samples has primary outcomes of symptomatic recovery, whether this is a significant reduction in specific symptoms, or future relapse. Whilst this is an important area of research, it could be argued that a focus on symptoms could neglect other important aspects of recovery to this population, including social recovery. Social recovery for perinantal mental health could have wider benefits, such as the long term benefit to the dynamic relationship between mother and child. Social recovery may also support mothers to make sense of their changes in identity, both becoming a parent and experiencing an acute mental health episode. Factors which are known to influence recovery from psychosis and which are likely to also be important in postpartum psychosis will now be discussed further.

Identity

Raphael (1975) outlines the concept of matrescence, a change in role when women become mothers, where a number of changes take place including physiological, relational and changes to identity. It is important to consider in depth these changes in the context of experiencing a mental health episode during this period, and if they have a mediating role in mothers mental health recovery. Changes in identity, and how individuals make sense of this can play a huge part in recovery from a mental health episode, but there is limited literature about changes in identity following an episode of a mental health difficulty in the perinatal period. The episode occurring in the perinatal period may provide context for individuals trying to make sense of their experiences, however this may also minimise the narrative around alternative sense making of the mental health experience, if the focus in recovery is purely on the role as a parent.

In contrast, the literature about changes in identity following an episode of non-perinatal psychosis is more extensive. A review by Harris, Lawes, Andrews, & Jacobsen (2021) highlighted key themes of "obliteration" of previous identity following a psychosis episode and "recovery as rebirth", including individuals making sense of their experiences. EIP services often spend time supporting sense making of psychotic experiences, including perceived loss of the previous self, and integration with the new self. These findings have some links to Forde, Peters, & Wittkowski (2020) in their review of mothers' recovery from postpartum psychosis, with themes identifying the need to integrate the past and new self, including talking about their psychosis experiences, and creating new experiences such as developing the bond with their baby. There appears to be overlap in the literature in recovery from psychosis and postpartum psychosis which should be further explored as

this could inform the use of models of understanding and interventions for postpartum psychosis populations.

Stigma

Wood, Byrne, Burke, Enache, & Morrison (2017) explored the role of stigma in recovery, finding that both perceived and experienced stigma significantly predicted personal recovery. Alyahya, Munro, & Moss (2022) also identified that stigma was experienced as a barrier to recovery from psychosis. These findings show the complex interplay of predictor variables for personal recovery and highlight the importance of meaning making of psychosis experiences, and the feelings that arise from this. This could also be relevant in postpartum psychosis populations, in understanding their perinatal mental health experiences, including their parenting experiences, and further studies exploring predictors of recovery should address sense making, and the emotional impact this can have on mothers. Stigma may be particularly relevant, especially given the high level of societal expectation placed on new mothers, (Henderson, Harmon, & Newman, 2016).

More widely in perinatal mental health research has explored the role of stigma and experiences of shame. Schofield, Brown, Siegel, & Moss-Racusin (2023) found significant differences in participants ratings of postpartum mental health and non mental health vignettes across all domains including competency and likeability, identifying stigma towards this group. They found the highest levels of stigma towards mothers with postpartum psychosis, (Schofield, Brown, Siegel, & Moss-Racusin, 2023). Although this lacks ecological validity, this research shows some indication of stigma which may be present for this population, but does not show the long term impact it may have.

Research has found that stigma from perinatal mental health difficulties can be a barrier to mothers seeking appropriate mental healthcare, and in some cultures views that difficulties shouldn't be shared with others outside the family (Insan, Weke, Rankin, & Forrest, 2022; Nagle & Farrelly, 2018). Additionally research has also explored the impact of mothers experiencing shame on their mental health, with Caldwell, Meredith, Whittingham, & Ziviani (2021) finding shame to be a significant predictor of maternal postnatal depression in their sample. Nagle & Farrelly, (2018) highlighted the importance of changing views around perinatal mental health in order to support mothers seeking help. Perinatal services working together may be key in order to facilate help seeking behaviours within this population.

Recovery Together

Within perinatal mental health research there are strong links to attachment theory, whereby babies use cues and behaviours to signal their needs to their caregivers, (Ainsworth, Blehar, Waters, & Wall, 2015). Psychosis can influence this process as mothers may not be able to be responsive to cues, due to their acute mental state, and others may take over this care. Mental health can also impact the confidence mothers have in their parenting skills, with Plunkett, Peters, Wieck, & Wittkowski (2017) finding when mothers recognised, they were able to notice their babies' cues, this increased confidence and motivated recovery. It may also be possible if mothers perceive that they are missing cues, this could have a negative impact on parenting confidence. During care in Mother and Baby Units (MBUs), mothers are supported by a multidisciplinary team to meet their own health needs and staff can also support the needs of the child. This supports the evolving relationship between mother and child, allowing mothers to meet their own

recovery needs, and then building their bond and parent behaviours, which can minimise the impact of mental health on their child in the long term.

As discussed, functioning is important, and perinatal approaches are inherently systemic focusing on the functioning of mother and concurrently monitoring the interactions with and development of the child. Perinatal mental health can have a vast economic impact on society, with Bauer, Parsonage, Knapp, Iemmi, & Adelaja (2014) estimating the cost each year in the UK as £8.1 billion, with 72% of this cost supporting the impact on the child. Difficulties in this attachment relationship and separations between mother and child can have long term adverse consequences for the child (Bowlby, 1969). Stein et al. (2014) summarises a vast range of evidence for children in the long term, including emotional difficulties and difficulties in cognitive development whilst addressing potential moderating factors such as parenting quality. In clinical services, mothers are supported to recover alongside their babies and families, with approaches encouraging interactions, and attending to parenting tasks to support the developing bond. Social recovery interventions have been tested in psychosis populations however, it may also be beneficial to explore these in postpartum psychosis. However adaptations may be needed to include the facilitation of a positive relationship between mother and child, and the wider family, as part of the intervention.

Strengths & Weaknesses

The systematic review conducted within this thesis portfolio is the first review, known to the author at time of writing, focusing on longitudinal outcomes of mothers experiencing a range of diagnosed mental health difficulties in the perinatal period. The decision was made to exclude mothers where there was no clear evidence of a formal

mental health diagnosis, so that mothers included had current experiences that mapped onto those accessing mental health services. Other perinatal mental health reviews in this area (Underwood, Waldie, D'Souza, Peterson, & Morton, 2016; Grigoriadis, et al., 2019) have not previously made this distinction and have included mothers with sub-threshold levels of mental health defined by above clinical cut-offs on self-report measures. However, it was considered in the development of the research question that these mothers may present differently and have differing recovery trajectories, therefore the groups should be researched separately. This review identified a gap in the research literature in perinatal mental health and it is important to continue to grow the evidence base to support clinical practice.

The review followed a systematic approach, using PRISMA protocols to guide the methodology. The review's screening process was a step-by-step approach, taking time to go through each phase ensuring appropriate papers were checked against the inclusion and exclusion criteria for suitability. The final stage of screening was also completed by a second researcher to ensure that there was high level of inter-rater reliability, and of the one paper where there was disagreement this was discussed and resolved. This methodology ensures high levels of reliability of the research paper, insomuch that future researchers will be able to replicate the methodology and find high levels of consistency in the final pool of papers.

A strength of the empirical paper in this thesis portfolio, is that it builds on the existing findings of Fowler et al (2018) and develops an understanding of variations in delivery and acessibility of this therapy which could be used to inform implementation.. The findings show subgroups within the intervention arm of the study who may benefit from adaptation or an enhanced approach in addition to those who may only require a less

intensive approach based on characteristics found at baseline. This finding has both clinical and therotical implications and further research is needed to understand individudals with psychosis who have lower educational attainment levels, and their engagement in psychological interventions. Researchers should also consider if this is a psychological or educational barrier to long term engagement in social recovery interventions. The findings also highlight barriers which may be encountered in clinical practice, and if SRT was to be introduced as in intervention in EIP services, it would be helpful to consider ways to overcome these, and build them within this approach.

One limitation of the systematic review was that there were high levels of heterogeneity within the research papers which led to some difficulty in coherently synthesising the results. A decision was made to not put any date limitations on the papers included within the review, however this does not take into account that the field of perinatal mental health has grown vastly in recent years and clinical interventions have undergone significant changes. It is possible that comparison of studies recovery rates undertaken 50 years apart lacks a level of validity and this may contribute towards the heterogeneity of recovery rates reported.

Another limitation of the systematic review would be that although each study included confirmed clinical diagnoses at baseline, through the use of a clinical interview, this was not a requirement at follow-up. Therefore, when comparing varying rates of recovery across studies, the different ways in which each of the studies defined recovery may limit the validity of the synthesis. Some studies included defined relapse at follow-up as above clinical cut-offs (Pope, Sharma, Sommerdyk, & Mazmanian, 2018), whilst others recorded further episodes of care, or further episodes of illness (Rommel, et al., 2021). In addition to this there was a limited amount of raw data available, and some studies did not

report changes in raw scores over time. Therefore, the methodology of some of the studies has limited the analysis that could be undertaken as part of the synthesis.

Future Work and Ideas

It is important for any psychological approach addressing understanding or treating mothers with postpartum psychosis to consider the relationship between mother and baby, as current knowledge is limited, and this relationship can set the foundation for both mothers' and babies long-term outcomes. Currently there are few specific models of mental health difficulties in the perinatal period and models are often borrowed from non-perinatal populations, which can be considered a weakness of this evolving field. This can create variability in understanding, and in designing interventions specifically for this population. Increasing research into interventions to support this relationship are set out in the NICE (2020) guidelines however currently little research has focused on capturing the complexities of this dyadic relationship. A first step to meeting these research aims would be to build the depth of knowledge about the relationship and build a specific postpartum psychosis model to conceptualise this understanding.

The original empirical project aimed to explore the relationships between mother and baby following an MBU admission for postpartum psychosis. The current literature focusing on postpartum psychosis is limited in comparison to other perinatal mental health diagnoses such as postpartum depression. Largely the research explores postpartum psychosis as a phenomenon, risk factors and possible interventions to support recovery. However, these studies are often cross-sectional cohort studies and retrospective therefore little is known about the dynamic relationship between mother and baby during this critical period. The project aimed to capture the complexities of this relationship over time and to

understand any impact this relationship may have on recovery from postpartum psychosis but also what impact postpartum psychosis may have on the relationship. The increase in understanding could form the foundation of a psychological model which future interventions could use. This sits in line with current NICE (2020) guidance, calling for more research into interventions focusing on the mother-baby relationship, and clinically would add understanding as perinatal mental health services continue to grow, increasing specialist care provision.

As part of the continuing growth of perinatal mental health services increased funding as part of the NHS (2019) long term plan supporting the expansion of specialist provision, has included an increase in service provision from 1 to 2 years. It may be helpful to consider interventions offered within these services and understand if these can or need to be tailored to different mental health diagnoses. It would be helpful within specialist services to consider offering increased support at specific timepoints known to be a high risk for relapse such as around family planning. Howard & Khalifeh (2020) outline that current research highlights a need to improve the information and processes around family planning in perinatal mental health, and emphasise the importance of family planning in recovery.

Personal Reflections

Undertaking the thesis portfolio and the research projects within has been a daunting process at times, managing the multiple demands from the projects in a time of great uncertainty in the world around us. My initial empirical project focused on mothers with postpartum psychosis and wanting to deepen the understanding of the developing dyadic relationship in this area between mother and child. I enjoyed learning more about

this population, the complex experiences they face during their motherhood journeys, and the array of professionals and systems mothers encounter as part of their recovery journey. I also enjoyed the challenge of developing the research idea and question, holding a focus group with individuals with lived experience and clinical members of staff to develop research materials and understand the important questions to ask within the proposed interview.

However, I found navigating the complexities of NHS ethics challenging at times. This process was long and frustrating, particularly in the context of the covid-19 pandemic, taking approximately nine months to complete, and then requiring further amendments, which left me feeling disillusioned with my research at times. However, I can now acknowledge the benefit to the research project of deeply thinking about methodology, the research idea, the benefits to the research literature and clinical implications that NHS ethics requires of you. I think these processes increase the robustness of projects and support research teams reflections, enabling a high-quality research study and I will take this forward within my own future practise both in research and clinical work.

Due to the ongoing impact of COVID-19 on NHS clinical care, including lockdowns on inpatient wards, there were significant difficulties with recruitment. This led to a discussion and agreement within the research team to change empirical projects at the end of November 2021, so that this could be completed within the clinical doctorate time frame. Although at the time this was the best decision for myself and the project, it left me with a feeling of disappointment and sadness that I couldn't complete the project that I had worked so hard on. I think in the months prior to this decision I had balanced the idea of wanting to do the project with the time pressure of the research requirements of the course which often left me feeling overwhelmed and feeling consistently behind my peers. It took

a little bit of time to mentally prepare to start again after a setback. However, I refocused on the new project, became more pragmatic about timelines, and dedicated myself to each stage.

The focus on the empirical project did at times overshadow the systematic review, and it took some time to find a research question. It was important to consider and research what the important questions were to answer within the perinatal mental health field, and then slowly narrow this down into a specific question. Supervision was an important space within this time to reflect on these questions and consider the thesis portfolio, considering how this review bought together the literature in this area and links to the dynamic relationship between mother and child, focused on within the initial empirical paper. Although the empirical paper changed, and the link is a little diluted, the thesis portfolio has explored the impact of perinatal mental health on the long-term outcomes for mothers, highlighted the need for further research of functional outcomes, and considered the potential role of social recovery therapy.

Conclusion

The systematic review included in this thesis portfolio shows varying symptomatic recovery rates in the long term and highlights the need to learn more about functional recovery following mental health difficulties in the perinatal period. In postpartum psychosis, there is a suggestion that whilst many mothers do recover, some mothers do still experience difficulties, and as researchers we should focus on understanding why. We may be able to take some of the learning from the literature on psychosis occurring outside of the perinatal period, as there are many factors which might be relevant to postpartum psychosis. This includes the impact on identity, which needs to be considered in the

context of the changing roles and identities of becoming a parent. Social Recovery Therapy could be a way to address some of these difficulties, however further research is needed to better understand recovery following an episode of postpartum psychosis, including mother-baby relationships.

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Appendix B – Information for Authors for submission to the Clinical Psychology Review

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

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• Include keywords
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Reporting sex- and gender-based analyses

Reporting guidance

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Sex generally refers to a set of biological attributes that are associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, internal and external anatomy). A binary sex categorization (male/female) is usually designated at birth ("sex assigned at birth"), most often based solely on the visible external anatomy of a newborn. Gender generally refers to socially constructed roles, behaviors, and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society. Sex and

gender are often incorrectly portrayed as binary (female/male or woman/man) and unchanging whereas these constructs actually exist along a spectrum and include additional sex categorizations and gender identities such as people who are intersex/have differences of sex development (DSD) or identify as non-binary. Moreover, the terms "sex" and "gender" can be ambiguous—thus it is important for authors to define the manner in which they are used. In addition to this definition guidance and the SAGER guidelines, the resources on this page offer further insight around sex and gender in research studies.

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Appendix C – PRISMA Checklist (Page et al., 2021)

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	

Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	

DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

Appendix D - Instructions for Authors submitting to the Journal of Clinical Psychology

1. Submission and Peer Review Process

New submissions should be made via the **Research Exchange submission portal**. Should your manuscript proceed to the revision stage, you will be directed to make your revisions via the same submission portal. You may check the status of your submission at anytime by logging on to submission.wiley.com and clicking the "My Submissions" button. For technical help with the submission system, please review our **FAQs** or contact **submissionhelp@wiley.com**.

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- The title page of the manuscript, including statements relating to our ethics and integrity policies (see information on these policies below in Section 1):
- data availability statement
- funding statement
- conflict of interest disclosure
- ethics approval statement
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- permission to reproduce material from other sources
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(Important: the journal operates a double-blind peer review policy. Please anonymize your manuscript and prepare a separate title page containing author details.)

- Your co-author details, including affiliation and email address.
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- Acknowledgments;
- Abstract structured (objective(s)/methods/results/conclusion)

- Up to six keywords;
- Main body:
    1. regular section formatted as introduction, materials & methods, results, discussion, conclusion
    2. In Session (invitation only) formatted as introduction, Case Illustration (including separate sections on Presenting Problem & Client Description, Case Formulation, Course of Treatment, Outcome and Prognosis), Clinical Practices and Summary, and Selected References & Recommended Readings
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Case Reports (by invitation only)	original articles illustrated through case reports	Yes, unstructured	Data Availability Statement

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Introduction (untitled). The introductory section should provide a concise overview (approximately 1/3 of the length of the manuscript) of the therapeutic approach being illustrated. Please include a brief discussion of the theoretical foundations and treatment principles. Summarize the outcome research in a paragraph or two.

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Case Formulation: In light of the presenting problem, describe how you formulated the case and how the formulation impacted on your treatment selection. Please avoid the use of jargon.

Course of Treatment: Describe the therapeutic process, focusing on the therapist's observations, the therapy relationship, specific interventions, and client reactions. Please use examples of therapist-client interactions to illustrate your approach. You may either reconstruct prototypical exchanges or use excerpts from actual transcripts.

Outcome and Prognosis: Case presentations should conclude with a summary of the treatment outcome and a discussion of the client's prognosis. Pre-post measures of change are particularly encouraged. Authors may also elect to integrate personal reflections on the course of treatment and the therapeutic outcome in this section.

Clinical Practices and Summary. In this conclusion section, please discuss the implications of the case for future applications of the therapeutic approach and dealing with this type of patient in the future.

References. Due to space limitations, we ask that you **provide no more than 25 references**. Please adhere to stylistic guidelines set forth in the APA *Publication Manual* (sixth edition) when preparing your reference list. Journal or monograph series titles should not be abbreviated.

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Appendix E – SRT Therapy Adherence Scale

SOCIAL RECOVERY THERAPY

ADHERENCE CHECKLIST

Participant ID: _____ **Therapist:** _____ **Session Number:** _____ **Session Date:** _____

Reviewer note: *When rating adherence, a score of 0 (not satisfying model component/no evidence), 1 (partial adherence/lack of information/component not completed), 2 (SRT model components clearly evidenced and completed) should be given. As a rule – ratings of 0 or 2 should be given. A rating of 1 is only given if evidence provided by the therapist is unclear or if it only partially satisfies the criteria for model components.*

Present?	Item	Description	Reviewer score (0-2)
	Engagement (compassion, validation, promoting hope)	Explanation of SRT at start of therapy, agenda setting, feedback, compassion, validation, promoting hope. This can and should be on-going throughout therapy. Identifying and discussing barriers to engagement. - *Adherent if therapist evidences explicit engagement strategies, client engages in session and agenda is set.*	
	Assessment	Developing a shared understanding of current difficulties; social, behavioural, cognitive and systemic. Behavioural and risk assessments included here. Explicit mood reviews and risk assessments should be included here. - *Only the first session will be ticked as an initial assessment. Any other assessment sessions will be ticked as ongoing.*	
	- Initial		
	- Ongoing		
	Timeline	Assessment/discussion of the impact of psychosis on current difficulties.	
	Problem and Goal List	Including development, setting and review. Any additional new problems or goals can be identified here even though it is not generated as part of a formal list. - *To satisfy a score of 2 on this item, explicit generation of problem/goal lists, reviews and discussions or additions thereafter must be evident. Working towards goals if linked within session can score a 1.*	
	Values-Based Assessment	Values map and work around values; including motivation to change which may not be classed as assessment but work on values. Developing values and reflecting back in later sessions to values. Thinking about things that are meaningful to the client and discussed as values. - *Initial generation, explicit discussion/review and values tasks score 2. Working towards values or just mention of values scores a 1.*	
	Social Recovery Formulation	Understanding onset and current maintenance of social recovery problems and other difficulties. Theory-practice links and conceptual integration. Linking maintenance formulations into process and longitudinal factors. Reviewing formulation and links or reflecting on changes in maintenance and reviewing components of specific models. Evidence participant helped to understand how CBT components relate to presenting problems. Change strategies/session material are related to formulation and underpinned in theory-practice links.	
	Psychoeducation – Normalising	Normalising experiences, symptoms and social withdrawal (avoidance) based on information discussed within formulation. Information relating to presenting problems.	

	Cognitive Work – Possible topics may include: - Thoughts/beliefs around unusual experiences - Thoughts/beliefs around symptom/mood - Stigma - Negative beliefs about self/others/world - Fostering positive sense of self and resilience - Thoughts/beliefs regarding waiting until feel better/ more confident/ less anxious etc. before undertaking new activities.	Cognitive work as a heading can include identification, discussion and change strategies. Possible topics as listed. Also included here could be more generic cognitive strategies such as thought challenging, evidence for/against exercises, developing alternative appraisals, surveys. Guided discovery and Socratic dialogue included.	
	Discussions/strategies regarding unusual experiences	Includes both discussion and implementation of strategies around unusual experiences. - *If cognitive strategies have been implemented "cognitive work" can be ticked as well.*	
	Discussions/strategies regarding social withdrawal	Includes both discussion and implementation of strategies around negative symptoms/withdrawal. This may include discussions around testing expectancies of success/pleasure. This may include discussions around social skills – modelling and role playing. - *If cognitive strategies have been implemented "cognitive work" can be ticked as well.*	
	Behavioural experiment (e.g. attention shift, dropping safety behaviours) *Brief description (attach any behavioural experiment worksheets):* _____ _____	Includes behavioural experiments aimed at testing out a thought, belief, assumption or prediction. For example 2-way experiments, attention shifting, surveys, in-session, in-vivo, video feedback etc. Behavioural experiments should be set collaboratively with a clear plan. - *Can be completed in session, set as homework or reviewing experiment.*	
	Behavioural activation	Meaningful and based on goals/values. Doing things differently. Ideally keeping a log and set this up as mastery/pleasure activity scheduling. Should be mention of how scheduled behaviours / activities impact on mood / presenting problem. Clear rationale should be evident for activation.	
	Overcoming avoidance	Examples of overcoming avoidance include mindfulness, relaxation, diffusion, emotional regulation strategies and coping strategies, to anxiety provoking situations and trying new things (not including where set as behavioural experiment).	
	Involving other systems/organisations (e.g. employers, education & voluntary agencies)	This would include case management type work, risk management, safeguarding, including family and friends and Individual Placement & Support. Communicating, sharing and relaying information to others would be included here. Systemic work and involvement of others in therapy should be rated here also, for example, parents as co-therapists or sharing formulation/ strategies with others in the system. - *To score a 2, this work must be explicit and active e.g. supporting participant to appointments, liaising with other professionals/family members, involving others in sessions or making referrals. Discussions around this/making plans to do this may be rated as a 1.*	
	Any costs incurred due to behavioural work: £_____	Costs relevant to behavioural activation, behavioural experiment, and involving other systems or organisations should be included here. This could include, for example, costs of admission to community activities.	

Reference: Hodgekins et al. 2019. Behavioural and Cognitive Psychotherapy.